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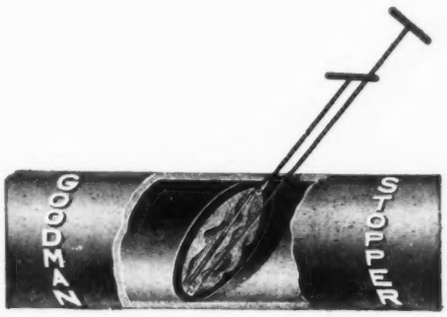

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Use of Gas in Manufacture and Utilization of Glue, Inks and Similar Substances

Processes Quite Similar Insofar as Heat Applications Are Concerned—Variety of Industries Using Gelatin Products

By GILBERT C. SHADWELL

The consideration of the heat treatments involved in the manufacture and utilization of glues and inks is desirably made jointly. In the first place the processes are somewhat similar so far as the heat applications are concerned, and secondly, a form of glue is employed in the manufacture of some of the inks. A third reason is that the two finished products are used in the same industries to quite an extent, and they are therefore strongly allied.

Glue such as is commonly employed in commercial work is merely an impure or crude form of gelatin. It is therefore desirable to explain in some detail how gelatin is made.

Gelatin consists of carbon (50 per cent), oxygen (25 per cent), nitrogen (18 per cent) and sulphur (1/10 per cent), together with other relatively unimportant substances.

Alcohol Will Not Dissolve It

It is common knowledge that this material is soluble in hot water, but it is not so generally known that alcohol will not dissolve it. This fact is made use of in preparing the finished product as it is purified by being first dissolved in a cauldron containing water which may be gas heated, after which the solution is poured into a bulk of alcohol.

This causes a dot to form, which consists of practically pure gelatin, having only the merest trace of ash or other foreign bodies or impurities. The heated water absorbes and dissolves the crude gelatin, and also most of the impurities as well. On the other hand the alcohol will not allow the gelatin to remain in soluble form, whereas the impurities are mostly unaffected. The result is that the gelatin goes into semi-solid form, and in doing so releases almost all the dirt and other matter which it previously contained.

The types of kettles used for carrying out this part of the process vary considerably, but that shown in Fig. 1 may be successfully employed. It consists essentially of a steel body at jacket C, into which is placed a kettle (usually water-jacketed with a second or outer kettle). An outlet is provided at the bottom and connected with the outside of the jacket, where it determinates at the valve D, from which the dissolved gelatin is run off into the alcohol. The hood A is sometimes used in installations of this character, but it is not essential.

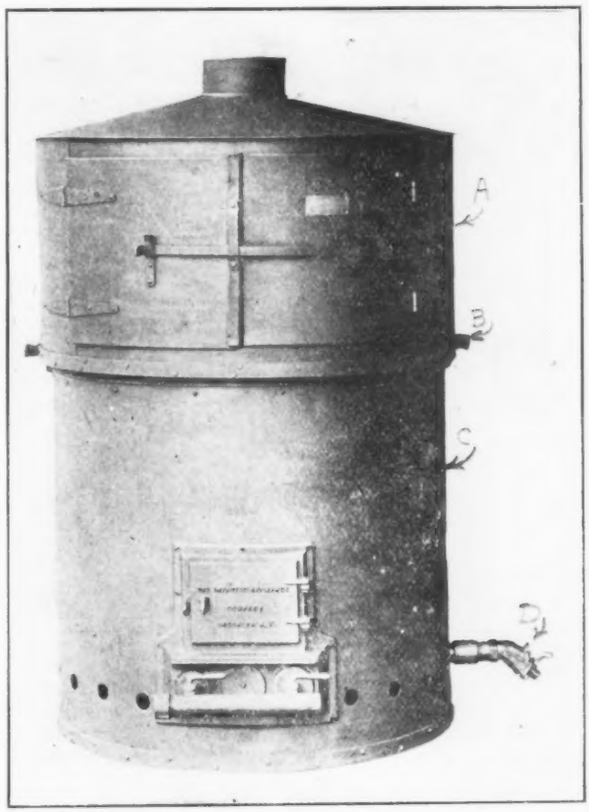


FIG. 1—GELATIN IS FIRST DISSOLVED IN A CAULDRON CONTAINING HEATED WATER

Commercial Uses of Product Have Greatly Increased

Of late years the commercial and chemical uses of gelatin have greatly increased. For instance, gelatin is the foundation of the dry-plate system of photography. The Goupil process of copying pictures, the old-fashioned straight gelatin process of copying manuscripts all require gelatin as their basic material. It is also very extensively used by manufacturing and other druggists for containing castor oil and other drugs as well as chemical and medicinal compounds of a nauseous nature. It is used for coating certain pills and by confectioners for some kinds of candies.

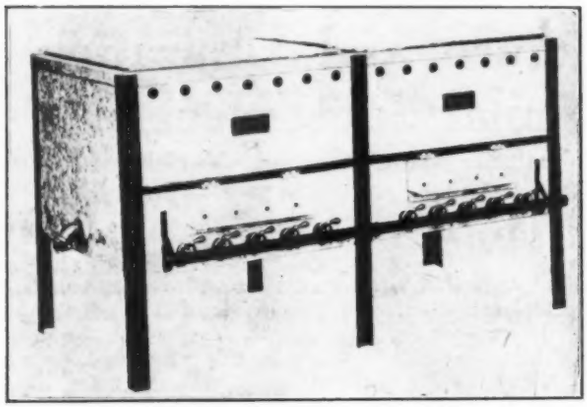


FIG. 2—BURNERS IN THIS TYPE OF GELATINIZING TANKS GIVE WIDE RANGE OF HEAT ADJUSTMENT

By dry distillation gelatin yields a quantity of ammonium carbonate, which is the basis of many cleansing compounds, and is used on a considerable scale by chemists and druggists, as well as in agriculture in modified forms. During the process of distillation there is given off a somewhat foul-smelling brown oil, which contains the carbonate, sulphide and cyanide of ammonia, as well as some more complete derivatives, such as aniline, methylanine, picaline and a number of pyridine basis. These are substances which are handled in considerable amounts by manufacturing chemists in the manufacture of dyes as well as in making certain explosive compounds. Gas is extensively employed in the preparation and purification, but space hardly permits of the consideration of these separate treatments in the present article.

Largely Obtained from Animal Substances

It is interesting, however, to note that as gelatin is largely obtained from animal substances, and lime is also an essential animal material, gelatin solutions dissolve lime and calcium phosphate much more freely than cold water, forming with the latter a definite compound, which probably forms part of the tissue of bones.

In technology, the term "gelatin" belongs also to isinglass and glue, as was indicated above. They are, therefore, modifications of the same material. Gelatin and glue signify the more or less pure and carefully prepared jelly of mammalian animals; but the term "isinglass" is only applied to certain gelatinous parts of fishes, which, from their succeeding richness in gelatin, are usually merely dried and used without any other preparation than that of minute division for the purpose of facilitating their action.

Gelatin proper is prepared for commercial purposes from a variety of animal substances, but chiefly from the softer parts of the hides of oxen and calves and the skins of sheep, such as the thin portion which covers the belly, the ears, etc. It is also prepared from some of the bones and other parts of animals.

Method Adopted with Skin Parings

The general method adopted with skin parings or hide clippings is first to wash the pieces very carefully. They are then cut into small pieces and placed in a weak solution of caustic soda for a week or ten days. When this process of digestion has been sufficiently carried on, the pieces of skin, etc., are then transferred to revolving cylinders supplied with an abundance of clean cold water and afterwards are placed in another chamber lined with wood, in which they are bleached and clarified by exposure to the fumes of sulphur dioxide. Then they receive their final washing with cold water, which removes the sulphurous acid (which is formed from a combination of the sulphur dioxide and moisture).

FIG. 3—TYPE OF THERMOMETER THAT MUST FULFILL VERY SPECIAL REQUIREMENTS

The next operation is to transfer them to the gelatinizing tanks. Water is poured in with the pieces and kept hot either by jacketing the tanks with steam or sometimes by the use of special gas-heated tank furnaces having screens at the bottoms to prevent scorching. The type of tanks used is shown in Fig. 2.

These tanks are surrounded with insulated, galvanized steel jackets and the burners are supplied with a number of controls to give a wide range of heat adjustment. When starting the boiling operation the burners are turned on full until the liquid reaches a temperature of about 190 deg. Fahr., after which some of the burners are turned out, but sufficient of them left burning in order to give a suitably even distribution of heat. It is of importance to see that the burners are not put out of commission by pieces being dropped onto the mixer shutters, etc.; therefore a hinged shield is mounted above them so as to form a protecting device.

A drain will be observed at the side so that the dissolved gelatin can be poured off and strained while still hot.

Liquid Poured Out in Thin Layers

It is most desirable to employ such a type of thermometer with this furnace that the stem will neither touch the sides of the tank nor yet the bottom, but it must record accurately the mean temperature of the liquid. Such a theromometer of this special order is seen in Fig. 3.

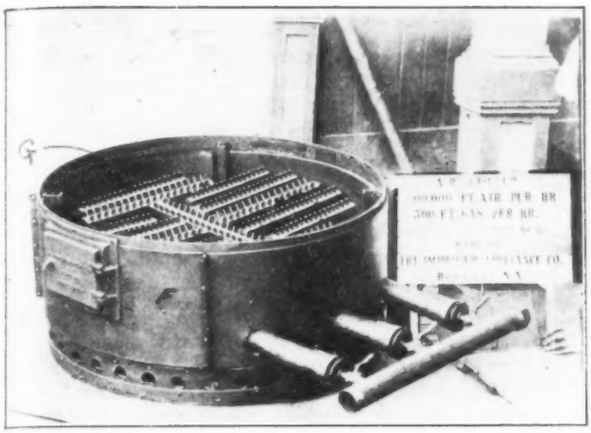


FIG. 4B—TYPE OF DRYER USED

When the liquid is released from the tanks it is poured out in thin layers, which, as soon as they are sufficiently cooled and consolidated, are cut into small plates (usually oblong), and laid on nets stretched horizontally to dry. This drying is to-day being carried out to quite some extent with gas-operated air heaters having a very high air capacity but a low air outlet temperature, and the air thus delivered is passed through the dry rooms containing the gelatin.

In view of the great attention which has been devoted recently to the subject of drying such substances, this particular appliance may deserve more than passing attention.

The regular style of gas-fired air heater is well-known by gas men. That shown in Fig. 4a and 4b is merely a modification, but the base and top being removed it is easier to show and explain the construction and operation in a few words. The particular model shown has a capacity of about half a million cubic feet of air per hour and a gas consumption of about 500 cu. ft.

The body A consists of a steel drum or shell, which is suitably insulated to minimize heat losses and contains regular boiler tubes, B. The air is blown in at the air inlet C, in such a way that it whirls around the tubes in spiral form, and finally strikes the hot sheet at the bottom and emerges from the outlet D. The hot glue gases pour through the tubes and emerge from the appliance by way of the hood and glue connection E, which is removed from its normal position at the top for the sake of clearness in explanation.

The heat is provided by special atmospheric burners, which are seen in the combustion chamber in Fig. 4b. In this photograph the jacket of the combustion chamber, F, forms the base on which the air heater proper, A and the hood E, rest.

Three controls are provided for the burners G, which are T-shaped and of the multitube type. This form of control has several important advantages for this class of work. In the first place perfect combustion is essential, and as the tubes cause a result in the burning of the gas similar to the use of a vast number of small Bunsen burners, a very high efficiency is the result. It is natural that a large air heater of the size indicated (400,000 to 500,000 cu. ft. of air per hour and a gas consumption of 500 or more cubic feet of gas per hour) will reflect quite some heat back onto the burners. This might cause them to turn yellow if they were of the ordinary drilled-port kind, but by raising the ports by the introduction of steel tubes the heat is modified on the burner heads because no flames touch them and secondly all secondary air reaching the flames must firstly pass over the heads and up the tubes, thus tending to keep both cool.

Reduces Drying Time from Weeks to Hours

When the blower has been connected with the inlet, and the outlet connected with the air ducts leading to the dry room, the installation is complete, and instead of it requiring a week or two to dry the gelatin it can usually be completed in a relatively few hours. Moreover, the state of the weather has little if any bearing on the rapidity with which the drying can be accomplished. Gelatin or glue are at no time easy materials to dry, but the use of a gas-fired air heater spells the difference between an operation which is distinctly burdensome to one which becomes distinctly easy and efficient, to say nothing of the vast saving in time accomplished.

One of the qualities of gelatin is the power to form chemical combinations with certain organic matters; hence, when it is mixed and dissolved in a fluid containing such matters it combines and the compound is precipitated, carrying down with it all floating substances that by their presence render the liquid cloudy; hence its great value in clarifying beer and many other beverages and liquids too numerous to mention. For this reason isinglass, which has been found the best gelatin for the purpose, is very largely consumed by the brewing industry.

Now while the purest commercial form of gelatin is isinglass (prepared as described above or modified by the use of the "sounds" or air bladders of fresh-water

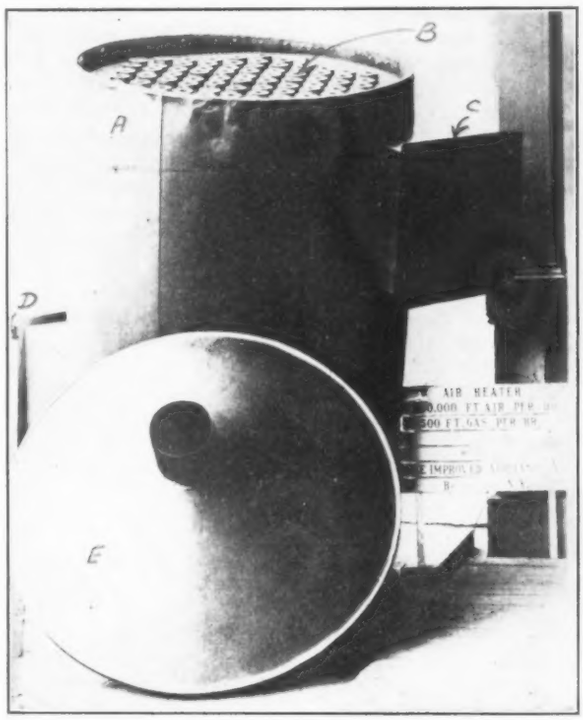


FIG. 4A—ANOTHER DRYER FOR SAME PURPOSE AS THAT SHOWN IN FIG. 4B

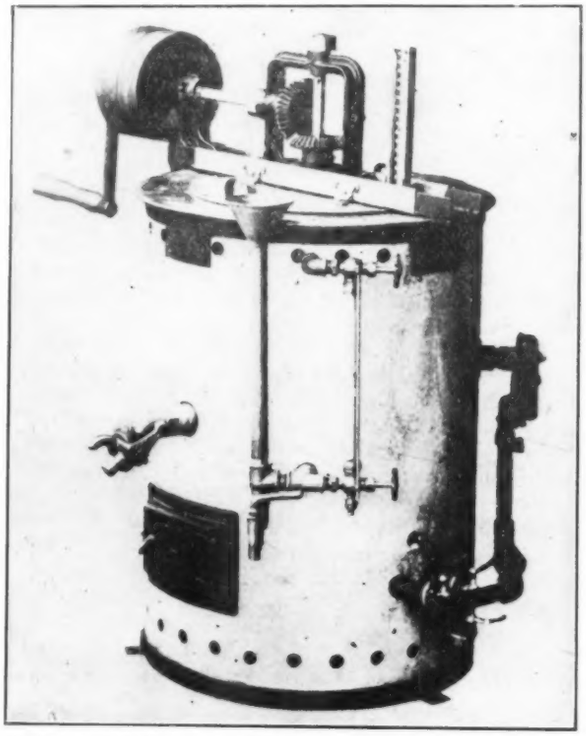


FIG. 5—GLUE HEATER EMPLOYED FOR PURPOSES OF CLASSIFICATION

fish), almost all kinds of animal and fish refuse find their way to the glue makers' cauldrons. The refuse of tanneries, consisting of the clippings of hides, hoofs, ear and tail pieces of oxen, calves and sheep, are preferred, because they can be dressed with lime, which removes the hair and acts as an antiseptic. For this purpose they are placed in tanks with quicklime and water for two or three weeks. They are afterwards washed and dried and are then ready for use by the glue maker, who usually gives them another heavier lime dressing, and subsequently washes them. They are afterwards exposed to the action of the air for a time to neutralize the caustic lime. All such work finds ample opportunity for the installation of one or more air heaters, as described above.

When well drained, the pieces are placed in copper cauldron furnaces somewhat similar to that shown in Fig. 1, but generally direct-fired (with gas) and not water-jacketed. The whole is kept at about 200 to 212 deg. Fahr. until all the gelatinous part has dissolved. The boiling is sustained until, by repeated trials of small quantities, the operator knows the fluid is of the right consistency, when it is drawn off carefully into the congealing boxes. These are of wood, and are nearly square, being slightly narrower at the bottom than at the top; they are filled to the brim and when their contents are sufficiently solidified the glue turns out in the form of a cube, which is cut into thin slices by means of a wire, and these larger slices are subdivided into smaller cakes by the use of a wet knife. Frames with nets stretched upon them are provided for drying the cakes upon in a manner similar to that outlined for drying the purer gelatin.

An Anxious Period to the Manufacturer

This process is a somewhat anxious one for the manufacturer, as the changes of the weather have great and often completely destructive effects on glue in this state unless drying by heated air in motion is resorted to. It is safe to say that every glue manufacturer will gladly welcome a gas-heated air heater to be used in conjunction with his work, not necessarily for the increased speed he might get by drying it in this way, but in order to reduce spoilage to a minimum and to be practically independent of any vagaries of the weather.

In any case, as a general rule, after air drying the glue is taken to drying rooms and heated slightly when it hardens effectually, but the writer sees no reason at all for the two operations when one is as much more efficient.

The cakes at this stage usually have a somewhat dull, unsightly appearance. In order to remedy this they are often wetted with a brush, dropped in hot or cold water and redried. The wetting gives the cakes a bright, varnished appearance.

In order to classify and test the glue and other gelatinous material produced a special form of glue heater is often employed. This is shown in Fig. 5. It is a water-jacketed device fitted with a combined hand and power-operated agitator, lid, water, jacket, water gauge, thermometer, burner equipment, pilot and thermometer, as well as a molasses gate outlet, by means of which the glue to be tested may be drawn off. The function of the appliance is as follows:

Water is poured in through the funnel filler (which connects with the water jacket) until a suitable level is shown in the gauge glass. The lid is opened and sufficient glue is inserted in the inner or testing kettle. The burner is then lighted by means of the pilot and the temperature is kept constant by means of the thermometer, which has previously been set to the required degree. In order to keep the glue at the required homogenity, the agitator is rotated (either by hand or by power). The melted glue is tested as to viscosity, adhesive power, etc. In this way the glues can readily be graded into the various classes or qualities.

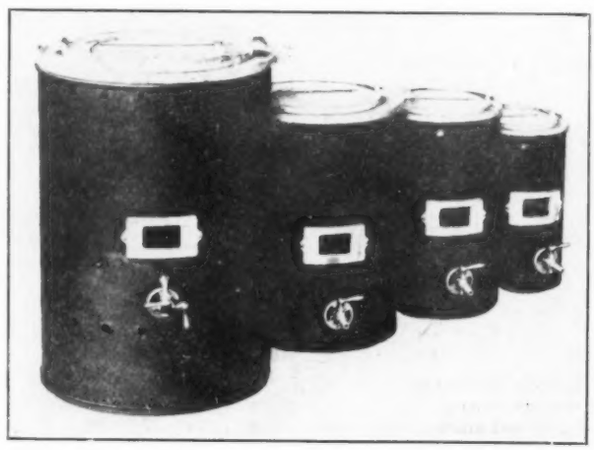


FIG. 6—TYPES OF INDIVIDUAL GLUE HEATERS

Clear Claret the Natural Color of Glue

The bright, clear claret color is the natural color of hide glue, which is the best and most economical. Light-colored glues (as distinguished from gelatin) are made either from bones or sheepskins, but cannot compare with the strength of that yielded by hides. Besides its use in joinery, cabinet-making, bookbinding, match-making and similar operations, glue is used by paper makers and in dressing silks; and for these last two purposes fine, light-colored kinds in thin cakes are made. Large quantities are employed by paperhangers and others for sizing walls. It is also used for stiffening straw, cotton, horsehair and other plaits for making bonnets and hats.

When glue is utilized in large quantities, a water-jacketed cauldron furnace is employed having a molasses-gate outlet, and it is usual to have the inner kettle made either of copper or galvanized iron, although enameled iron is sometimes required for certain glues.

Where Individual Heaters Are a Necessity

For shops where much glueing is done, steam is sometimes used exclusively, but a water-jacketed glue heater (heated by gas) of the cauldron furnace type (above mentioned) is most desirable and satisfactory. In addition individual glue heaters for each operator are almost a necessity. These are indicated in several sizes in Fig. 6. A glue heater of this kind consists of a steel jacket having a burner mounted inside it at a convenient distance from the outer pot or water jacket. Inside this jacket there rests another pot containing the glue, which may either be used to melt the solid glue for direct use or it may be filled from the larger glue heater described previously. The pots should usually be of heavy construction, so as to hold the heat, and a handle should be provided for the inner pot in order that it may easily be carried from place to place if necessary. A wiping wire is also a valuable adjunct. It prevents the pot becoming caked up with hard glue down the sides or at the top.

Fig. 7 shows a special form of glue heater made with a thermostat thermometer and outlet. It is so arranged

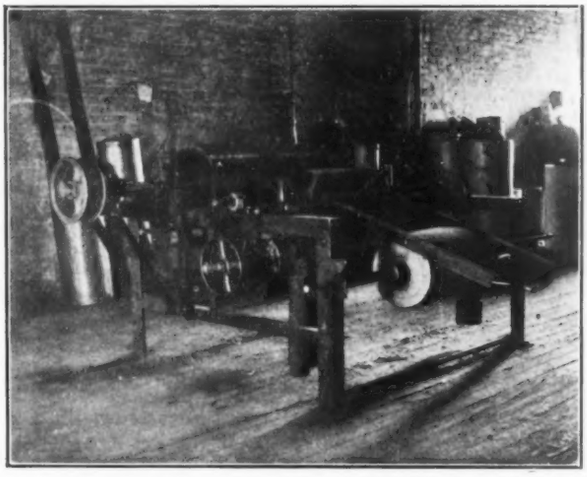


FIG. 8—MACHINERY EMPLOYED IN MANUFACTURE OF PAPER CONTAINERS

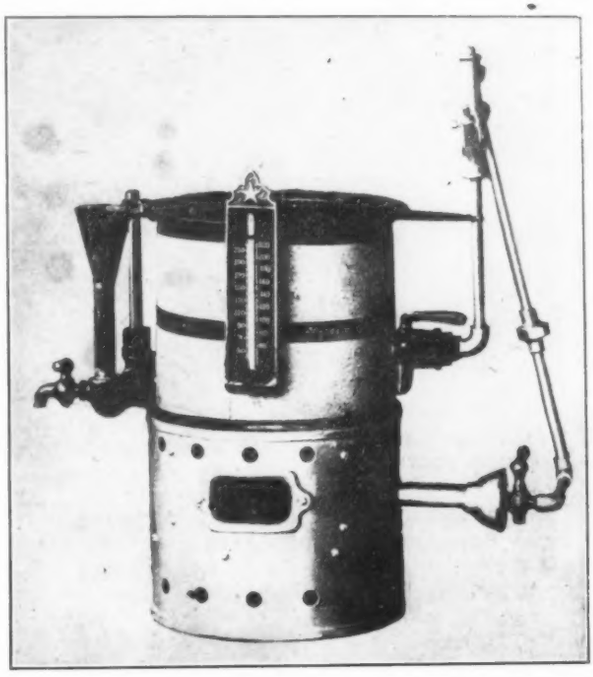


FIG. 7—GLUE HEATER WITH THERMOSTAT

in order to keep the glue at a constant temperature, and is used particularly for glueing belts.

The utilization of glue is thus exceedingly wide, and mention must not be forgotten of such uses as the glueing of paper cylinders, which are made as indicated in Fig. 8. These paper cylinders have in turn many uses, being formed into cartons, mailing tubes, etc., etc.

Marine glue is not to be compared with the regular gelatin kind spoken of above, for it is used for paying seams in ships' decks after being caulked.

It consists of india rubber cut very small and digested at a gentle heat in a closed vessel with coal-tar naphtha until it is dissolved, when powdered shellac is added, and the digestion is continued until it also is dissolved. Heat is seldom employed, but a gas-heated oil-circulating system or steam jacketing are sometimes used.

Application of Gas to Ink Making

In respect to ink, the word is a general term for any fluid substance which when applied to a suitable surface leaves upon it a partially or wholly indelible impression. Any such fluid may be used for writing purposes, but as the recording material is generally paper, this fluid must have either an affinity for the fibrous matter of which the paper is made or for the sizing material which is used to produce upon it a homogeneous surface or coating. For this purpose some of the very high-grade sizing materials referred to above are employed for producing such coated papers as we often see in use. Certain salts have this property, especially salts of iron, which when exposed to the air absorb oxygen, the result of which is that the pale blue-green solution produced by mixing protosalts of iron with vegetable matter containing tannic or gallic acid is converted into a dense blue-black insoluble compound.

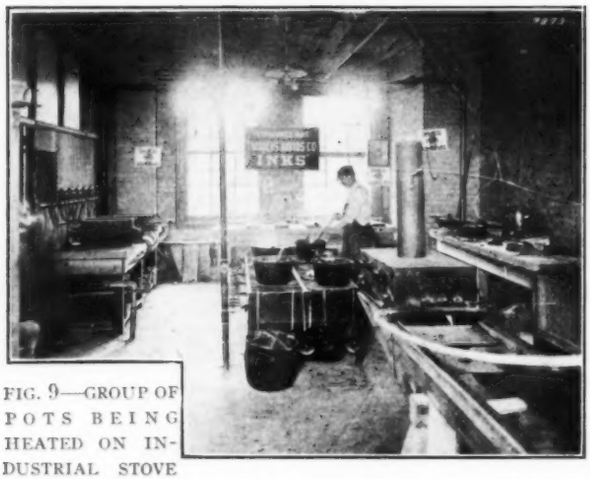


FIG. 9—GROUP OF POTS BEING HEATED ON INDUSTRIAL STOVE

Writing inks are generally acid in character, which often causes the corrosion on metal pens.

Copying inks are prepared by adding sugar, gum, or glycerine to ordinary writing inks. These substances protect the coloring matter (combined with the iron) from the oxidizing influences of the air by forming a kind of skin over the writing. Copyable printing ink is also made; and when written and printed matter is to be copied together its use is a great convenience. As colored writing inks usually require no heat treatments, they need not be here considered.

Printing and Lithographic Inks

Printing and lithographic inks, however, need our special consideration, as they form an item of great interest to the gas fraternity. Most of them contain drying oils which have to receive a preliminary boiling in a direct gas-fired cauldron furnace.

Printing ink is therefore our only compound in contradistinction to writing inks which are quite fluid and of a more "watery" nature. In printing inks the solid pigments are held in suspension. There are three distinct qualities or classes of printing inks. They are: (1) Newspaper inks; (2) bookwork inks, and (3) lithographic inks.

With the common inks it is not necessary that the more expensive drying oils be employed as a vehicle or varnish for the coloring matter. Common oils made from paraffin and rosin are used more with ordinary lampblack. The better class of printing inks, however, must actually dry upon the surface of the paper in the same manner as paint will dry when applied to a wall. This result is obtained as explained above by the employment of drying oils—that is, oils which have the property of absorbing oxygen and becoming gum-like or resinous in character.

The manufacture of colored inks is much the same as for black inks, except that the varnish must be of the very highest grade possible, and therefore the greatest care must be taken in boiling it so that the chemicals do not react in one another (this being a very important argument in favor of gas).

Fig. 9 shows a number of pots being heated on an industrial stove, which is shown in greater detail in Fig. 10. The operator requires considerable skill in mixing these high-grade inks, and while the actual thermal efficiency of an industrial stove may not be high, this equipment gives most highly satisfactory results when coming from a number of relatively small containers.

In lithography, both writing and printing inks are employed, these being of a peculiar character. The former consists of a soapy fluid holding in suspension fatty matters (shellac, white wax and tallow), which on being transferred to the lithographing stone are absorbed and retained by its porosity. The subsequent application of lithographic printing ink to the damp surface of the stone causes it to collect and form a layer on the portions which the lithographic writing ink has penetrated.

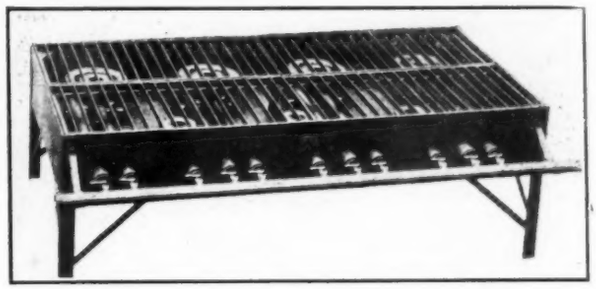


FIG. 10—WHILE ACTUAL THERMAL EFFICIENCY OF INDUSTRIAL STOVES IS NOT HIGH, VERY SATISFACTORY RESULTS ARE GIVEN IN INKS MANUFACTURE

Special inks are prepared in a somewhat similar way for collotype and tinplate printing.

Heat in the form of gas fire is used extensively in lithographic plate drying and in tinplate drying. Space does not permit of these subjects being dealt with here at this time, but will be considered in a later article, due to their very great importance.

Restriction On Importation of Plumbago or Graphite Extended

The restriction upon the import of plumbago or graphite has been extended by the War Trade Board, to be effective for the entire calendar year of 1918. Under the list of restricted imports No. 1 this restriction was made absolute until July 1 of this year, the possibility of importing not to exceed 5,000 long tons for the remainder of the year being left open should investigation prove that stocks in this country were inadequate to meet the home requirements for the entire year. As a result of the investigation, it has been found that present stocks, together with the home production, suffice to meet the home requirements until well into 1919. The restriction has therefore been continued in effect, and the Bureau of Imports has been instructed to issue no licenses for the importation of plumbago or graphite for the rest of the calendar year.

12,000,000 Ft. Gas Well Struck

Mannington district, which last year produced about the only sensational oil development which occurred in West Virginia, recently came to the front with a gas well which promises to be of equal importance in a 12,000,000 ft. well which came in for the Hope Gas Company on the Musgrave farm, which lies along Camp Run, 5 miles west of Mannington, W. Va.

No Appreciable Loss Results to Consumer Meter Registration Through Fallen Pressure but Considerable Loss Indirectly Follows From Sluggish Flow of Gas

Charles V. Critchfield Discusses Value of Gas Delivered at Varying Pressures

The natural phenomena of contraction and expansion of gas works a blessing on the one hand and a menace on the other, asserted Charles V. Critchfield, in a paper presented at the annual meeting of the Natural Gas Association of America. The fact that large quantities of gas may be compressed into small volumes permits its transportation over large distances and makes it possible for cities hundreds of miles removed from the source to be supplied with apparent ease. As this contraction of volume by compressing can be controlled at the will of the utility, I use the term "blessing." But when the utility releases in its distributing system this compressed gas, it loses control, and the other phenomenon of expansibility take place, limited in its action only by the joint use of the utility's patrons. In other words, the response of the gas confined in the mains to expand itself to a volume that will meet the simultaneous requirements of every consumer served, results in dissipating the pressure to such a figure as to impair the service to all.

Gas plays no favorites, but gives wherever wide-open valves welcome its expansive character. Nature abhors a vacuum, and every foot of gas unrestricted tries to fulfill nature's law.

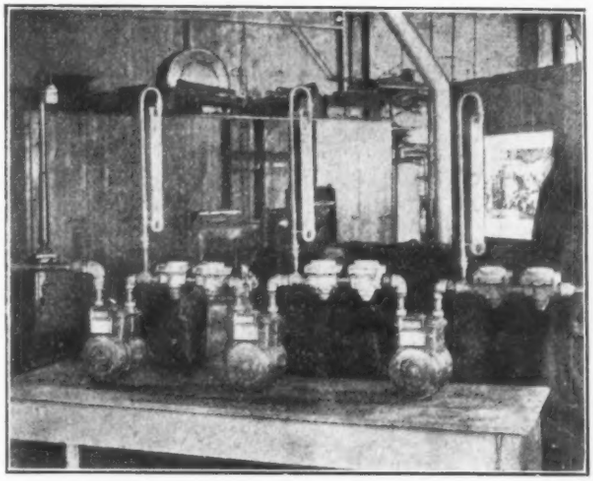
Gas Consumers Interested in Just Two Things

All gas consumers are interested in just two things: first, the results obtained to terms of heat, light or power; second, the amount (cost) of gas used in obtaining such results. With some the first is of major importance, with some the second—many both. But with all the public verdict for poor results and high cost is, universally, low pressure.

To return to the subject of the value of gas at varying pressures, I call attention to the accompanying cut, illustrating a simple, and I believe a reliable, method of ascertaining by actual measurement the amount of expansion due to the reduction of pressure.

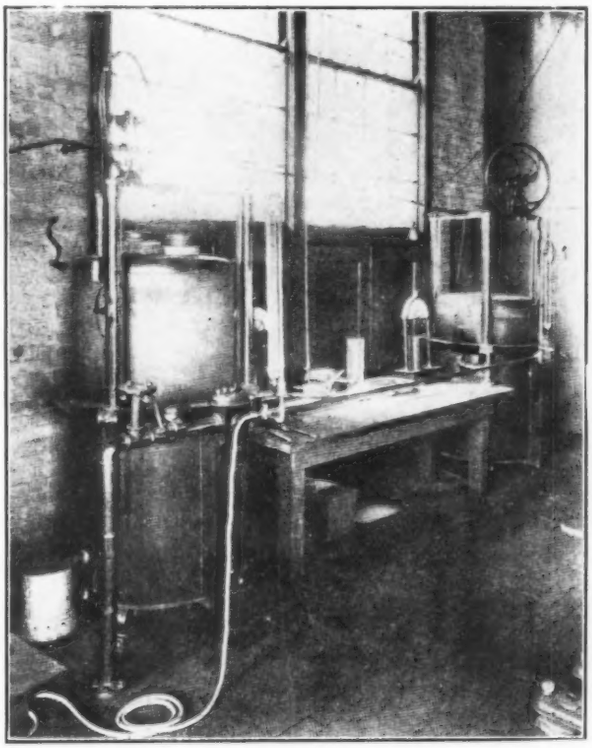
Using Domestic Meters for Demonstration

This view shows two 10-ft. meter provers rigidly connected by a short length of ¾-in. pipe. Prover No. 1 has its bell weighted to a pressure of 4 oz. per square inch. Prover No. 2 has its bell weighted to a pressure of 1 oz. After thoroughly purging both the provers, No. 1 was filled with gas and then allowed to force its contents into prover No. 2. As the scale of prover No. 1 indicated a transfer of 8 cu. ft. of gas, the scale of prover No. 2 indicated 8.125 cu. ft., or an expansion of 1.56 per cent. To check this test the provers were reversed, i. e., the pressure on prover No. 2 was increased to 4 oz. and that of No. 1 reduced to 1 oz., with the same results. It will be noted that the percentage of expansion runs very close to the theoretical value, and I believe with refined instruments the results would coincide.



METERS AND REGULATORS USED IN CONFIRMATORY TEST

To make a similar demonstration, using domestic meters in place of provers, three meters were connected in series with some house regulators between. One was introduced into the first meter at 4 oz., reduced and passed into the second meter at 2 oz., and further reduced and passed through the third, or last, meter at 1 oz. The amount of gas registered in the third meter was 1½ per cent more than by the first, while the difference between the first and second, and the second and third, was too slight to detect. The accompanying view shows the arrangement of meters and regulators except that, in assembling them for the photographer, the regu-



METER PROVERS AN AID IN DETERMINING EXPANSION DUE TO LOW PRESSURE

lators were inadvertently connected onto the outlet instead of the inlet sides of the meters.

A further demonstration of the degree of expansion as expressed in heat units was secured in repeated tests by the calorimeter with natural gas under 4-oz. and 1-oz. pressures. The loss in heat units when the pressure was reduced from 4 oz. to 1 oz. was so slight that it was covered up by the ordinary trivial errors made in the observations.

These three demonstrations prove conclusively that the amount of expansion following a lowering of pressures from 4 oz. to 1 oz. is very slight and, since domestic meters measure volumes irrespective of pressure, the increased amount of gas passing through and registered by meters at times when pressures are extremely low is shown in the following table.

Based upon 1,000 ft. of gas delivered to the consumer under a pressure of 4 oz., meter would register an additional amount over 1,000 ft., as follows:

Pressure	Cu. Ft.
4 oz.	1,000.0
3½ oz.	1,002.1
3 oz.	1,004.3
2½ oz.	1,006.4
2 oz.	1,008.6
1½ oz.	1,010.7
1 oz.	1,012.9
½ oz.	1,015.1

Our experiments so far relate to the second item in which the consumer is interested, viz., the amount, or cost, of gas used. Passing to the first item, i. e., the results obtained in the appliances, our experiments relating to gas values at varying pressures would indicate that the unsatisfactory results of subnormal pressures are due, in the main, to appliances so inflexible that they operate efficiently, as well as economically, only at some predetermined pressure.

Factors Controlling Efficiency of Appliances

Two factors control the efficiency of the appliances. One has to do with the combustion, the other with the location where the combustion takes place. All domestic natural gas appliances are equipped with burners designed to produce what is known as a "Bunsen" flame. In order to burn natural gas efficiently it is necessary to support combustion by air. The quantity required is approximately ten parts of air to one of gas. In the usual form of burner gas is admitted through a central opening called an orifice, sometimes termed a "spud." Surrounding this orifice, which, by the way, has a diameter of a very small fraction of an inch, is a much larger passage through which the air enters the burner. Gas is forced through the orifice by a pressure, and as it emerges it draws in a certain quantity of air, which mixes with the gas and assists combustion. The air so drawn in is termed primary air. Additional air, called secondary air, originates around the flame, contributing to a more efficient combustion. The proportions of air to gas depend upon the relation of the gas orifice to the primary air passage at some known gas pressure.

The average gas consumer buys a kitchen range or hot-plate and puts it in service, assuming that the burners are complete and adjusted to efficiently consume every foot of gas furnished by the local gas company. To demonstrate what would happen to an average gas consumer, a two burner hot-plate was picked at random from the stock of a well-known manufacturer. This hot-plate was represented to be properly equipped and adjusted to efficiently burn natural gas furnished in a large city in Ohio on a pressure of 4 oz. The distance between the top of the burners and the top of the grid or plate surface was found to be 1⅛ in., and the burner was equipped with a No. 52 orifice and having the mixer shutter fully open. Connecting the hot-plate to the gas supply, natural gas of 1,125 B.t.u., 6 lb. of water was placed in a new closed copper teakettle. A "well" had been previously soldered into the kettle into which was inserted a dairy thermometer. Test No. 1 shows the results obtained at from 1 oz. to 4 oz. pressures, with the burner as located by the manufacturer. Test No. 2 shows the results when the burner was lowered about 1 in (⅞ in.).

The figures in the last column to the right are merely for the purpose of ready comparison, being the product of the rise in temperature, the gas consumed and the time. Two things will be noticed: first, the quantity of gas varies much less than the time; second, the distance of the burner from the vessel effects results much more than does the variation in pressure. In my opinion no appreciable loss through low pressures results to the consumer through meter registration, but considerable loss indirectly follows from a sluggish flow of gas and attendant poor mixers, combined with short burner

(*Continued on page 39*)

Test No. 1

Orifice	Weight Water	Burner Distance	Gas Pressure	Water Rise From	Water Rise To	Net	Cubic Feet Gas	Time	
No. 52	6 lb.	1⅛″	1 oz.	60 deg.	212 deg.	152 deg.	2.025	20′ 39″	381
No. 52	6 lb.	1⅛″	2 oz.	55 deg.	212 deg.	157 deg.	2.17	14′ 52″	303
No. 52	6 lb.	1⅛″	3 oz.	56 deg.	212 deg.	156 deg.	2.18	12′ 19″	251
No. 52	6 lb.	1⅛″	4 oz.	56 deg.	212 deg.	156 deg.	2.30	11′ 18″	243

Test No. 2

Orifice	Weight Water	Burner Distance	Gas Pressure	Water Rise From	Water Rise To	Net	Cubic Feet Gas	Time	
No. 52	6 lb.	1¾″	1 oz.	60 deg.	212 deg.	152 deg.	2.20	22′ 20″	448
No. 52	6 lb.	1¾″	2 oz.	58 deg.	212 deg.	154 deg.	2.37	16′ 39″	364
No. 52	6 lb.	1¾″	3 oz.	56 deg.	212 deg.	154 deg.	2.475	13′ 47″	315
No. 52	6 lb.	1¾″	4 oz.	54 deg.	212 deg.	158 deg.	2.48	11′ 46″	277

Silent Salesman for Gas Billboard Lighting

John J. Burns, commercial manager of the Laclede Gas Light Company, of St. Louis, Mo., is the originator of one of the most unique "silent salesman" ever devised. This particular silent salesman's specialty is the use of gas for billboard lighting, but incidentally it (for this salesman is inanimate) boosts gas for all lighting purposes in preference to electricity.

This is how the "silent salesman" was created:

On Lindell Boulevard, near Vandeventer Avenue, in St. Louis, there was a long billboard, sections of which at night were electrically lighted, other sections were gas lighted, and still others were not lighted at all. One night while passing this billboard Mr. Burns was struck by the fact that the section of the board lighted by gas was much more brilliant than that equipped with electric lights. In fact, while the gas-lighted portion of the billboard was as legible at midnight as in broad daylight, no portion of the electrically lighted signs was entirely legible at night.

Mr. Burns immediately ordered a photographer to make a flashlight photograph of the entire length of the billboard, with the results shown in the picture. Thereafter when a billboard advertiser expressed any doubt as to the relative merits of gas and electric lighting, he was shown this photograph. In nine cases out of ten the photograph closed the deal. In the tenth case the prospect was taken out to view the billboard itself, and usually he signed the gas-lighting contract on the spot.

Accomplish About the Same Results with Coal Range Converted to Gas For High Duty Hotel Use as With Range Manufactured Essentially For Gas

Atlantic City Company Making Great Headway in Banishing Coal Burning Equipment—Hotel Consumption Increased 10,000,000 ft. a Month Since Beginning of Year

By L. N. YETTER
Commercial Manager, Atlantic City Gas Company, Atlantic City, N. J.

New Plan Adopted for Payment of Bills at Elyria

Owing to the steady growth of Elyria, Ohio, together with the scarcity of labor, the Citizens Gas & Electric Company announces that commencing in August the city will be divided into three zones and each district will have a stated period at which time gas bills may be paid.

June gas bills will be paid the same as usual, but before the July bills are due the company will have informed its customers when they are supposed to visit the office or mail a check for service.

There are so many consumers at present that it is almost impossible to handle them in the ten days the company grants a rebate, so when bills are paid there will be three pay periods, so but a third of the present number will be called on to pay bills at any one time.

This will permit meter readers additional time to visit the homes and secure the readings and the clerical force will not be rushed to figure out the amounts of the bills.

The Atlantic City Company since the first of the year has been gratifyingly successful in displacing coal for hotel service. This is accomplished by installing heavy-duty ranges designed for gas, and by installing gas burners in existing coal ranges. The high-duty ranges and the burners used are supplied by the Majestic Manufacturing Company, of St. Louis, Mo.

Same Results with Converted Range as with New

We have accomplished about the same results with the converted range as with a new range. In order to get high efficiency from the coal range, it is necessary to put in a system of baffling with firebrick and check the circulation of heat around the ovens and retain it under the top surface to give the required temperature to the entire top heating surface. Also to give an equal distribution around the ovens.

We also have a great many of the Garland hotel ranges in use, both closed and open top. Same are giving good service.

The following is a list of our con-

sumers of this class and their equipment:

St. Charles Hotel—One double section hotel range; two single section hotel ranges.
Raleigh Hotel—One double section hotel range; one single section hotel range.
Seaside Hotel—One single section hotel range.
Chalfonte Hotel—One double section hotel range; four single section hotel ranges.
Brighton Hotel—One single section hotel range.
Stanley Hotel—One double section hotel range; one single section hotel range.
Marlborough-Blenheim Hotel—Five single section hotel ranges.
Shelburne Hotel—One double section hotel range.
Terminal Hotel—One single section hotel range.
Chelsea Hotel—One double section hotel range; four single section hotel ranges.
Holmhurst Hotel—One double section hotel range; one single section hotel range.
Bothwell Hotel—One double section hotel range

CONVERTED COAL RANGE CONSUMERS

Logan Hotel—One set burners, double oven coal range.
Childs—Two sets burners, three oven coal range.
Traymore Hotel—Seventeen sets Majestic burners in coal ranges.

The above are all in active use and giving entire satisfaction. We therefore take great pleasure in recommending the Majestic hotel ranges for heavy duty work, especially in hotels that are operated on the American plan.

MAINTENANCE SYSTEM

We have a system of maintenance which we give to the consumer in the way of keeping the burners adjusted and regulated, and those that are operating the range are thoroughly familiar with the operation of same.

We also read the hotel meters on the first day of each month, so that they will get the bill for the calendar month rather than the index, as we find hotels are anxious to obtain the cost for each calendar month.

We also give a memorandum reading every ten days, which gives them three readings per month. This aids very much in keeping in actual touch with the gas being consumed. In some cases we read the meter every day, or instruct someone at the hotel to read it, so that those that are responsible may be in actual touch with the gas being consumed.

SERVICE A BIG FACTOR IN HOLDING BUSINESS

We have found that the service given large consumers is a big factor in helping and holding business. However, it is also equally important to place the appliances that are most suitable in each individual case. We have increased our consumption on the hotels about 10,000,000 ft. since the first of the year over the same months last year, which tends to show that we are forging ahead in that branch of our business.

Striking Comparison—Gas vs. Coal

Of course, everybody knows that gas is labor-saving as compared to coal; but it takes a practical demonstration, such as was recently given by the Sterling Company, San Francisco, Cal., to open the eyes of the public as to just how much labor is saved by the use of gas. This company recently displayed in one of its windows a rusty coal range, with one leg propped up by a brick and the top covered with worn-looking kitchen utensils. On the other side was a spic-and-span gas range, with several new aluminum cooking vessels on top. Between them was a little card, with red arrows pointing both ways, with the caption, "Which Are You Handling?" In front of the coal stove was a bucket of coal, bucket of ashes and a big pile of kindling, while in front of the gas range was a small box of matches. A large card close to the buckets advised:

The former owner of this coal stove has handled 47 tons of coal, carried out 39,466 lb. of ashes and used 523 sacks of kindling.

Do you wonder that she was tired out and all run down?

Now she laughs at kitchen labor, for she is the possessor of a

GAS RANGE

A partially worn stove was shown with the card:

Don't move your old stove.
Turn it in for a gas range.
Then pay fifteen cents a day.

A framed card above the gas stove shows a facsimile hand-written superscription: "Yours faithfully—That's what this stove will always be." A black card, lettered in white, suggested:

CALIFORNIA'S LARGEST
STOVE DEPARTMENT
INVITES YOUR INSPECTION

Wander through it at your pleasure—Stay as long as you please—You are cordially welcome.

An Abundance of Light and Heat

One of the best stunts for bringing the advantage of gas for both lighting and heating purposes to public attention was recently pulled off by the Los Angeles Gas Appliance Company. Realizing that life, or its simulation, never fails to attract, they fitted up their window to represent a section of library or den. In the rear was a large mantel of pressed brick, in which was a gas grate with fire logs. Draped above the mantel was a large flag, and on a little stand were shaded gas lamp, clock and marble statuette. At one side was a divan upholstered in brown and fawn, and here reclined a young woman in blue neglige reading a book. The furniture was borrowed from a local furniture establishment, and the wax model from a dry goods store, small cards down front acknowledging the courtesy of the loan. At the side of the divan was drawn up a small stand, on which was a box of candy and a student's portable gas lamp. Attention was called by a card:

For an Atmosphere of Absolute Contentment There Is Nothing Like

PLENTY OF GOOD HEAT AND LIGHT

Moral: Burn Gas

Another window was entirely filled with gas grates, in front of each being a card, "When you come to this grate you know that you have found what fire comfort really is"; "With this grate you get all the comfort—and then some—without trouble or dirt"; "Why chance annoyance of disagreeable odors when this new gas grate is absolutely odorless?"; "This grate does not merely give off heat—it

radiates heat—something entirely different from what you have been accustomed to."

More Time for War Work

The Denver Gas & Electric Light Company has a building that is one of the sights of the city, and it is so listed in the Denver "Book of Sights." Outlined at night in a blaze of lights, it can be seen for miles. On the top of the big ten-story building is a huge electric sign showing a big red devil stirring a flaming cauldron, and beneath it the words, "Use a Gas Water Heater." A recent display of this company, which could be duplicated to good advantage by any dealer in gas appliances, showed in the foreground a gas range, by which stood a woman in the uniform of a Red Cross worker. On one side of her was a large card:

A little woman can cook a big dinner on this Gas Range without effort.

In these times, when every moment counts, there is a vast saving of time and energy in the use of gas for cooking, lighting and heating.

At the other side was another announcement:

MORE TIME FOR WAR WORK—

Knitting, surgical dressing, or canning—if you use a Gas Range

You can prepare your meals with the minimum amount of time and energy.

Other catchy cards which called attention to the range, gas irons, gas hot-water heater and lamps, advised:

Why work all day in an atmosphere of dust and heat, over a red-hot stove, when you can prepare a meal in half the time, with comfort, on a

GAS RANGE

In one year the amount you pay for a Gas Range will be saved in fuel and food value—and think of the comfort and convenience attained.

Buy a Gas Range to-day and let it start paying for itself.

Don't ruin a good disposition over a hot coal stove.

Buy a Gas Range and save time, health and money.

Circular Letter with Postal Card Insert Brings Good Return to Chicago Company

The information bureau of the Peoples Gas Light & Coke Company, of Chicago, Ill., recently conducted an experiment as a result of which the value of postal card inserts was finally determined. A letter with a postal card insert was sent out to a list of candy-makers, and 44.6 per cent of them were returned. The following figures may serve as a basis of estimate for similar ventures:

Total number of letters with cards enclosed sent out, 2,436.

Total number of letters with cards enclosed delivered, 2,277.

Total number of letters with cards enclosed not delivered, 159.

Total number of cards returned answered, 1,018.

Per cent of total cards sent out which were answered, 44.6.

Number of cards returned with proper information, 575.

Per cent of total cards sent out returned with proper answers, 23.6.

Per cent of total cards returned, which were returned with proper answers, 56.4.

Number of cards returned with incomplete information, 493.

Per cent of total cards sent out which were returned with incomplete information, 18.2.

Per cent returned with incomplete information, 43.6.

A copy of the letter follows:

"We desire to classify our accounts, and will appreciate it if you will kindly fill out and return the inclosed card.

"This information is for the sole purpose of assisting us in our compiling data which will show to what extent our product is being used in our line of business.

"By complying with this request you will greatly assist us.

"Thanking you for your courtesy, we remain,

'Yours very truly,

"The Peoples Gas Light & Coke Company,

"Information Bureau."

What makes these figures still more significant is the fact that this list of candy-makers included many shops that are nothing more than mere candy stores.

Rate Increase Petition Filed by Indiana Companies

The Peru Gas Company has filed a petition with the commission asking authority to increase its rates for gas from a schedule, ranging from $1 to 70 cents net, to a schedule ranging 15 cents per 1,000 cu. ft. higher.

The Northern Indiana Gas & Electric Company has filed a petition asking for authority to increase its rates for gas in the city of Wabash from $1 to $1.15 per 1,000 cu. ft. The company also asks a 15-cent increase for each 1,000 cu. ft. of gas supplied at Logansport, where the rate now is $1.10 per 1,000 cu. ft.

May Earnings of Massachusetts Gas Companies

The earnings of the Massachusetts Gas Companies for May were $608,301 net, more than for any previous month in the company's history, which follows a net of $591,739 for April. Freer movement of boats permitted by the good weather was reflected in profits of $487,000 for the commercial department in May and of $477,000 in April. In some of the winter months, when the coast and harbors were ice-bound, profits from this department fell away to small figures, December showing only $57,000 net, for example.

Massachusetts Gas subsidiary earnings for the five months up to June 1 total $2,263,835. This is after making proper provision for Federal taxes. For the 1917 year Massachusetts Gas and its subsidiaries paid more than $1,000,000 in income and excess profits taxes, a sum equal to $4 a share on the holding company common.

The profits of $2,263,835 previously mentioned exclude the company's equity, which is a substantial amount, in profits of the New England Manufacturing Company, and also excludes the equity in J. B. B. Coal Company earnings. Allowing a full year's preferred dividends, or $1,000,000, the balance of $1,263,835 is equal to about $5 a share on the $25,000,000 common, with the ensuing seven months' profits, plus the company's proportion of earnings of the two companies not included, all accruing for the common.

The Elk Gas Coal Company, of Clendenin, Va., incorporated with $50,000 capital stock, has been organized by the election of officers. L. V. Koontz is the president.

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Taking in the Slack

The Fuel Administration, we understand, is to ration domestic consumers on coal supplies. Under present conditions, this is an obviously wise step, and should eliminate a vast amount of waste.

The same body has more or less inactively pushed the use of gas for heating and cooking as a means of coal conservation. If it has the power to put a certain degree of "punch" behind its request to use gas wherever possible for these purposes, it has an opportunity to save more coal even than rationing will.

In the sense of coal economy house heating by gas affords the most promising point of attack there is for coal conservation. But in money spent the citizen who turns to gas merely from patriotic motives is in effect penalizing himself as compared to the citizen who continues to burn raw fuel.

If there was some compensating advantage the Fuel Administrator could offer to the citizen who accedes to his requests in turning to gas, or some spur he could apply to stimulate the tardy thinker to activity, there would be considerable more heating by gas and consequent augmentation of the National coal pile.

Then, of course, it would be necessary for the Fuel Administrator to see that the gas companies got the coal so they could provide the necessary gas, and for the regulatory commissions to fix rates that would enable them to do so without going into bankruptcy.

Selling Heat Units

More than merely a definite measure of what the consumer actually uses, are the latent possibilities in the practice of selling gas in terms of heat units instead of thousands of cubic feet which is being increasingly advocated.

The big possibility is in the elimination of differences between the consumer and the gas company. In a number of the hearings of the past year it was conclusively demonstrated that the heat unit standard in mind was much higher than that practically usable by the average consumer; that only a fraction of the quality set would serve a useful purpose. The consumer would get just as much for his money with a lower standard.

The commissioners apparently believed the testimony to be true. Yet they adhered to the higher standard.

They feared the people; feared it would be difficult to make clear to the average citizen that he would be getting just as much from 525 B.t.u. gas as he was from 600 B.t.u. gas. There are technical points connected with such a comprehension that the politically inclined commission did not consider the public would take the trouble to familiarize itself with.

But if the average citizen had been paying for heat units instead of cubic feet he wouldn't have cared

much what standard was set so long as he was getting service, for if he was getting 525 B.t.u.'s instead of 600 B.t.u.'s his bills would be proportionately less. He wouldn't be paying for more than he was getting as he would have been, according to figures, meaningless, but tangible nevertheless, had he been paying for so many cubic feet that should bring him so many times 600 B.t.u.'s, and he only getting so many times 525 B.t.u.'s.

Likewise the party of the opposition to the open-flame burner user would not be constituted by the gas company alone if the cooking consumer was paying for heat units. If only five-sixths of the quantity he was paying for was serving his purpose, if the cost of the waste was directly borne on his gas bill, he would very promptly look askance at the stupidity which sought by setting a standard so high as to necessitate the inclusion of elements in manufacture that would give an illuminating value to the gas for the benefit of the open-flame lighting user who openly we recognize as of obsolete mind and deserving of no consideration whatever.

Making Good a Falling Off

If the gas industry happened to be dependent entirely on the open-flame burner for its lighting business at the present time, it should take no very fearless prophet to say that the next few years would see the elimination of the gas industry from the field of illumination.

Fortunately we have the incandescent mantle, which, for a second time, has saved the lighting business of our industry.

Nevertheless, there still is a considerable open-flame lighting load, and the service rendered it has been, and will be to an increasing extent, necessarily unsatisfactory.

There has been a considerable falling off in the business. We are not sensing its extent to the full for the reason that there is so much new business of other kinds to take its place that we haven't felt the loss.

One reason why gas lighting is still with us, is that it got there first, and some people are exceedingly loath to make a change. Once they do, however, they go to extremes.

Gas lighting, properly provided, is the best lighting. It has not had the publicity though that electric lighting has. It does not even have the prestige its good qualities entitle it to. It's all right for the working man's house, but we gentry of the starched collar—even though the income is small—wouldn't think of it for the show points of our aristocratic residences. We do have it back in our dens where we do most of our eye work, but no one sees it except ourselves; hence we do not lose caste.

Gas lighting, because it has lacked the National publicity that electric lighting has had, is more difficult to sell and to keep installed than it should be according to merit.

We cannot afford to lose those lighting customers who are with us from force of habit. They are a valuable inheritance.

The loss of their business will not for the present time be felt. It will be later though, and, because the habit has been broken, if we let them get away from us now, we might not be able to get them back again.

Our best strategy is to get mantles on their open-flame burners before they really become convinced that gas lighting is no good. Then we can go on merrily taking out the light oils, as, in fact, we will have to, and they won't even know we aren't sending them *illuminating* gas.

The Part That We Wasted

One of the developments of the past year and a half has been the amazement that many have experienced at the sums they have been able to take out of their annual wages without materially curtailing or altering their mode of life.

Had you asked John Jones two years ago what he thought of his job, his reply would have convinced you that the gas field was a poor place to work in if one had any fondness whatever for the almighty dollar. John apparently was eking out a miserable existence; didnt live any too well, and was always about two weeks behind in his finances. As for putting anything aside—such a possibility was absurd.

Then came the war and Liberty Bonds. They told John they needed his fifty, or hundred or five hundred dollar subscription, and needed it bad. Otherwise they couldn't win the war.

John was very susceptible to such an appeal. Whether he willed it or not, John felt he was shirking something, being left at home. He had a wife and maybe one or more children dependent upon him, or perhaps had things in his head that made him pretty essential where he was. But John had a sound body and sufficient physical endurance. Daily he saw dozens less excellently endowed physically than he taking trains for the cantonments. John couldn't really comprehend why, justly, he should not be among them. John's conscience, even though unwarrantably, was inclined to give him trouble.

Consequently John, at home, was not going to leave anything undone that he could do to help win the war. He didn't buy the bonds outright, of course. John never had fifty dollars he could lay down in a lump since he could remember. He bought on installments.

It was like getting dollars out of clear space. John hasn't definitely determined even yet where the money came from, yet he met his installments when they were due. His salary hasn't gone up more than twenty-five per cent, and the increased cost of living more than

used that difference up. John and his family are not eating less, though, of course, they are wasting less. He hasn't made any readjustments as to table from motives of personal economy, only those requested by the food administrator. And he hasn't cut down so he can notice it on the little luxuries he allowed himself—tobacco, etc.

Yet John has several hundreds of dollars' worth of bonds stored away in his strong box. They do not look like so many hundreds of dollars to him yet. He hasn't visualized his patriotic efforts in the investment sense. They are merely so many crisp pieces of paper with a high sentimental value—certificates of jobs well done. He has gotten into the habit of looking on his investments in U. S. Government bonds very much in the same light as he does his gifts to the Red Cross—money spent in a good cause, but with no practical return. In fact, so carelessly does he regard these purchases in the investment sense, that if John were trying his best to establish his financial position there is a good likelihood that he would forget to mention his Liberty Bonds.

There is a great lesson in this experience for John Jones. He has learned that there is a leeway in his income over living expenses. In the effort he has made for his country it has been revealed to him that from the excess funds he spent he got no worthwhile return. John knows now that he can save something and still live as well as he ever did.

The discovery has an importance, too, to the gas company management. Salaries and wages in the future will be better than they have been in the past. But they will be fixed on a scientific basis. The fundamental principle will be: a sum sufficient to defray the reasonable living costs of John Jones—not stintingly fixed, but sufficient to allow him and his family a comfortable and contented life—and a percentage of excess to permit him having something tangible to show beyond a mere living for each year that he has worked. The principal point to be determined is the sum that John should reasonably expend to attain the result sought.

Commission Shortsightedness

The war found many of the big companies prepared or almost prepared to meet unusual conditions. Some gas companies were not. There are companies whose plants are so equipped mechanically as to get the cost of production down to the last degree. There are other plants where money wisely spent would reduce costs of production as much as thirty cents a thousand.

Then, why, since the companies are running at a loss, are these improvements or changes not made? The reason is simple.

To make them the companies must pay perhaps as much as nine per cent for the money to defray the cost. The commissions will allow them no more than seven per cent return.

If the rates remained the same as they are now, the companies would make the changes, and, without a cent additional burden to the consumer, once again get into the profit-earning classes. Unfortunately, as conditions stand, the company that makes the changes would be penalized by a reduction in rates. The particular commission that has jurisdiction over it will insist on its pound of flesh. The rate must be lowered to a seven per cent return and it costs the company nine per cent for the money to make the changes—a clear loss of two per cent. Its situation will be worse than before.

This is regulation with a vengeance; regulation of the kind that cannot see even though it has a thousand eyes.

Correspondence

A Real Means of Getting Rid of the Open Flame Burner

SIR:—I was very much interested in reading an editorial, suggesting "a real means of getting rid of the open-flame burner," which appeared in your issue of the 6th instant. I quite agree that consumers should be weaned away from the open-flame burner, in their own interest, if for no other, but there is now a conclusive reason why this wasteful method of securing illumination should be eliminated. The same amount of illumination as given with the open-flame burner can be secured with mantle burner at a greatly reduced consumption of gas. It is generally conceded that the legitimate use of flat-flame burners is practically nil, and if they could all be eliminated it would mean a great saving in gas, which, of course, would conserve the coal and oil now used in producing it, and these raw materials are now so sorely needed in the prosecution of the war. The elimination of the open-flame burner would be truly conservation, and is a matter which should directly concern and interest the Fuel Administration, which is contending with the serious problem of shortage of both oil and coal in this country.

An order advising, if not directing, consumers of gas, wherever possible, to substitute mantle burners for open-flame burners, would be, in my judgment, "a *real* means of getting rid of the open-flame burner." I realize, of course that this would mean a falling off in consumption to gas companies, but this should be immaterial in view of the fact that it is in the National interest.

CHARLES M. COHN,
VICE-PRESIDENT, CONSOLIDATED GAS, ELECTRIC LIGHT & POWER COMPANY OF BALTIMORE, BALTIMORE, MD.

No Appreciable Loss Results to Consumer Meter Registration, Through Fallen Pressure, but Considerable Loss Follows from Sluggish Flow of Gas

(*Continued from page 32*)

flames. To state this briefly and more intelligently would be to describe a situation wherein all the gas companies' consumers would try to divide among themselves the available supply, say, 1,000,000 ft., by a demand that required several hundred thousand more to give their appliances, unadjusted, a sufficient supply for efficient operation.

If I were to be asked what suggestions would you offer to meet this situation, it would be to lower your normal pressure as far as your distributing system would permit and maintain a stable pressure, adjust all appliances to this pressure; buy, borrow or steal all the gas you can; make no more extensions; induce your customers to install combination heating appliances; educate your patrons to realize that the heyday of gas production is behind them and that certain inconveniences naturally go hand in hand with a cheap-priced fuel.

Publications

Abstracts of Current Decisions On Mines and Mining—Sept. to Dec. 1917

U. S. Bureau of Mines Bulletin 164. Author, J. W. Thompson. Paper backs; 9 x 6 in.; 146 pages. Obtainable from U. S. Bureau of Mines, Department of the Interior, Washington, D. C.

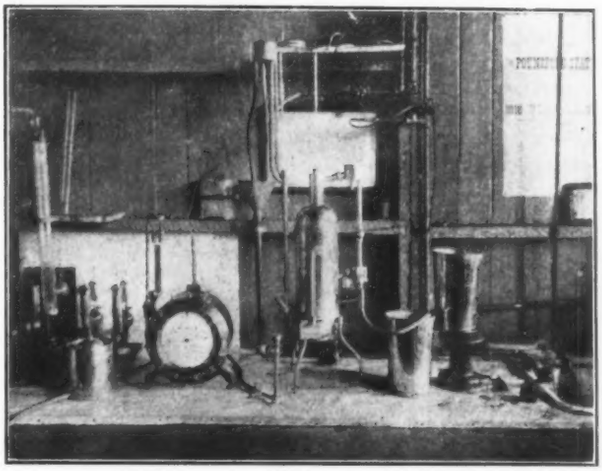
Covers: Minerals and mineral lands; eminent domain; mining terms; mining corporations; mining claims; mining partnerships; statutes relating to mining operations; mines and mining operations; mining leases; mining properties; school of mines; quarry operations; damages for injuries to miners; water rights; interstate commerce, and publications relating to mining laws.

An Investigation of Twist Drills

University of Illinois Bulletin. Authors, Bruce W. Benedict and W. Penn Lukens. Paper backs; 6 x 9 in.; 139 pages; illustrated. Obtainable gratis from Engineering Experiment Station, University of Illinois, Urbana.

A series of experiments to disclose certain facts regarding the performance of metal drills has been completed by the Engineering Experiment Station of the University of Illinois and the results published as Bulletin 103. One-inch drills of many well-known standard makes and special cast-iron blocks made in the shop laboratories were used.

The power required at the drill point for different speeds and rates of feed was noted in all tests, the thrust and torque of the drill were recorded by special dynamometers, and the endurance of drills of different designs was studied. The economical helix angle, point angle, clearance angle, speed, and feed were determined,



CALORIMETER USED AS A THIRD DEMONSTRATION OF DEGREE OF EXPANSION DUE TO LOW PRESSURE

and the effects of pilot holes and rounded corners were shown.

The tests were conducted by Bruce W. Benedict, director of the shop laboratories, and W. Penn Lukens, research fellow in the Engineering Experiment Station.

Proceedings Tenth Annual Convention Canadian Gas Association

Cloth-bound volume; 7 x 5 in.; 92 pages; illustrated. Published by Gas Journal Publishers, Limited, Hamilton, Canada.

Contains membership list, committee reports, and papers on: "How Can the Smaller Gas Companies Obtain Industrial Fuel Business?" by H. E. G. Watson, and "The Relation of Employee Training to After-War Conditions," by Dr. Lee Galloway, together with discussions.

Institution of Gas Engineers—1917 Transactions

Cloth-bound volume; 9 x 6 in.; 315 pages; illustrated. Published by the British Institute of Gas Engineers, London, and edited by Walter T. Dunn.

A report of the annual general meeting held in London last year. The contents includes roll of honor of the institution; address of the president; annual report of the council; report of refractory materials research committee; report of the gas-heating, lighting and ventilation research committee; second report of the life of gas meters research committee; memoirs; membership lists, etc.

Recovery of Gasoline From Natural Gas by Compression and Refrigeration

Bulletin 151 of the U. S. Bureau of Mines. Paper-back volume; 9x6 in.; 123 pages; illustrated. Obtainable from the U. S. Bureau of Mines, Van H. Manning, director, Washington, D. C.

In investigating the general problems that relate to the petroleum industry in the United States, the Bureau of Mines has given considerable attention to the recovery of motor fuel from natural gas. Recent developments in gasoline power units and their increasing

use have made it imperative that all fractions of petroleum suitable for fuel in this type of engine be conserved. The bureau has issued a number of publications on this subject. Among these are Technical Paper 10, "Liquefield products of natural gas, their properties and uses"; Bulletin 42, "The sampling and examination of mine gases and natural gas"; Technical Paper 87, "Methods of testing natural gas for gasoline content"; Bulletin 120, "Extraction of gasoline from natural gas by the absorption method"; and Bulletin 88, "The condensation of gasoline from natural gas."

This report treats of the compression and refrigeration process for the recovery of gasoline from natural gas from the viewpoint of the practical engineer and business man. Conditions of actual operation and the equipment in use are cited and described so that operators, and others interested, can compare the variations in methods of treating natural gas for its gasoline content in the different fields and also the conditions encountered and the features that control the methods used.

Petroleum, Asphalt and Natural Gas

Bulletin 14 of the Kansas City Testing Laboratory. Flexible artificial leather-backed volume; 5¼ x 7¾ in.; 247 pages; illustrated. Obtainable from Kansas City Testing Laboratory, 1013 Grand Avenue, Kansas City, Mo. Price, $2.

A work prepared for those interested in the production, refining, selling, uses and technology of petroleum, asphalt and natural gas.

The contents include:

Statistical matter on the production of petroleum in the world, by countries and United States by States, by fields and by pools up to 1918. Petroleum marketed since 1859 by States. Production and value of petroleum in 1917 compared with iron, copper, zinc, lead, gold and silver. Production of various products of petroleum, including gasoline, kerosene, lubricants, paraffin, fuel, oil, gas, asphalt, road oil and grease. Production of cracked and natural gasoline as related to automobile industry. Production of casing-head gasoline and natural gas. Average production of individual oil wells. Prices of petroleum products. Lists of petroleum refineries in the United States by States with capacity. Lists of casing-head gasoline plants, of owners of tank cars, of owners and location of pipe lines and of chief producers of oil.

Also a list of all principal petroleum refining patents in the United States up to 1918. Description of the Benton, Dewar & Redwood and Burton cracking processes. Classification and outline of various types of cracking processes showing fundamental principles involved. Typical skimming practice. Refining for production of road oil and asphalt. Refining for lubricants. Removal of sulphur and color from oil. Extracting gasoline from natural gas, and geologic occurrence of oil as to local conditions and geological periods. Depth of petroleum wells. Origin of petroleum. Oil gushers. Decline of oil wells. Relation of oil, gas and salt water.

Details of chemical constitution of petroleum. Gravities of common crude oils with amounts of gasoline and kerosene obtained from them and maximum amount of gasoline obtainable by cracking. The chemical nature of the cracking of oil. Tables of paraffin, olefin and benzine compounds in petroleum with their properties. Specific heat, heat of vaporization and heat of fusion of petroleum. Detailed chemical properties of gasoline. Synthetic gasoline. Detailed composition of asphalt. Composition of oil shales, cannel coal and shale oils. Vapor pressure and other physical properties of gaseous hydrocarbons. Effect of sulphur on oil. Odor and color in oil. Amount of carbon, hydrogen, nitrogen, sulphur and oxygen in various oils. Catalysis in cracking of oil. Method of determining the amount of cracked gasoline obtainable from petroleum. Nitrogen in natural gas. Composition and properties of natural gas. Methods of measuring the flow of natural gas. Method of making distillation test of gasoline. Viscosities of various types of oil at various temperatures.

The demand for fuel oil in industries and in the U. S. Navy. Definition of fuel oil. Gravities, viscosities, heating value and other properties of fuel oil produced by various means and from various sources. Comparison with oil as fuel and other sources of heat. Costs of fuel oil in steam plants compared with coal. Specifications for fuel oil. Advantages of fuel oil installations. Miscellaneous information concerning fuel oil including its consumption in refineries and metallurgical work.

Tables for measurement of water and petroleum. Tables showing relation of Baumé gravity, specific gravity and weight per gallon, U. S. Standard, tables showing relation of Baumé gravity, specific gravity and weight per gallon, petroleum association. Tables for reducing specific gravity readings to 60 deg. Fahr. Tables for converting Baumé gravity readings to 50 deg. Fahr. Tables for conversion of temperatures by Fahrenheit and Centigrade scale. Tables showing relation of specific gravity to content of sulphuric acid. Table showing content of oleum or fuming sulphuric acid. Tables showing relation of equivalent of degrees of Baumé and specific gravity for liquids heavier than water. Tables of the metric system. Conversion factors for units of linear dimensions, surface, area and square measure, weight, volume, capacity, cubic contents and space, pressure, work, temperature, heat quantities, time, velocity and of money. Table showing gravity and content of caustic soda solutions. Table for calculating flow of gas by Pitot tube and orifice meter. Table for converting viscosity readings.

The illustrations include: Small outline map of important petroleum fields. Distillation curves of crude oil. Graphic method of representation of the commercial composition of crude oil. Graphic representation of solubility of paraffin wax. Distillation curves of market gasoline, kerosene and fuel oil while undergoing cracking. Effect of oil cracking temperatures on the strength of steel. Relation of the distilling temperature of various light hydrocarbons found in or produced from petroleum to specific gravity. Method of calculating the amount of oil contained in horizontal and vertical cylindrical tanks. Apparatus for cracking test of heavy petroleum hydrocarbons. Other cuts taken from patent drawings and various publications on petroleum.

1917 Report of Public Utilities Commission—Connecticut

Cloth-bound volume; 9x6 in.; 535 pages; illustrated. Published by the State of Connecticut at Hartford.

Covers the period from July 1, 1916, to Sept. 30, 1918, and recounts the financial operations and results of all the public service companies reporting to the commission, including twenty-nine electric companies, twelve gas, fourteen gas and electric, two express, eight rail-

road, twenty-one street railway, ten telephone, four telegraph and eighty-eight water.

The assets and liabilities of all essentially gas companies are shown to be $19,026,569.62, opearting income $4,428,633.69, and total operating expenses $3,130,-194.14, leaving a balance to be carried to profit and loss of $1,298,439.55.

The total amount invested in plant and equipment at Dec. 31, 1915, was $15,463,959.90. During the year there was expended for additions $958,909.34.

The total revenue from the sale of gas for all purposes was $3,885,439.92 and for residual products $432,-722.18. During the year the several companies paid in taxes $307,951.46, and there was charged against operating expenses for depreciation $180,077.27. The total dividends paid amounted to $1,046,980.

The total operating revenues of the gas end of the gas and electric companies totaled $1,141,657.66. Operating expenses of the gas departments totaled $873,-797.30. Of the total investment in plant and equipment of $14,251,605.32, $5,006,918.98 was on account of the gas properties. The total amount of expenditures during the year on account of plant and equipment for gas properties was $196,660.63. Total dividends paid by the gas and electric companies amounted to $729,766.68.

How the Gas Companies Are Helping the Nation

G. Herbert Woodall was mentioned in the issue of July 6 of the American Gas Engineering Journal, page 15, as being formerly general manager of the Brooklyn Borough Gas Company, Brooklyn, N. Y. This note should have read "general manager," as he still holds that position.

Corporal Roy Chase, formerly in the employ of the Peoples Gas Light & Coke Company, of Chicago, Ill., is now with the Marines. In the Chicago daily newspapers recently there appeared an item giving Corporal Chase credit for capturing two machine guns, wiping out the crews and turning the guns on the enemy.

Charles E. Hinckley, meter reader and arc light man for the Gloucester Gas Light Company, Gloucester, Mass., who left July 2 for Paris Island, S. C., to join the Marine Corps, was presented with a trench razor kit from his fellow workers. The presentation was made by George Honnors. Mr. Hinckley has seen previous service in the military line, serving with Company G on the Mexican border in 1916. He was discharged last summer on account of dependents, just before the company was called for active service again. He is the tenth man from the gas company to enter the United States service.

James S. Casey, of Utica, N. Y., left July 1 for active service in the United States Navy. For the past two years he has been in the employ of the Utica Gas & Electric Company as watch engineer at the Washington Street station. Before leaving he was presented with a wrist watch by his associates as a token of their esteem.

C. R. Preston, formerly of the accounting department of the Empire Gas & Electric Company, Bartlesville, Okla., is now in training at the Great Lakes. His address is Company 282, Regiment 8, Barracks 826 East, Camp Decatur, Great Lakes, Ill.

A. Leroy Grimm, who was with the Empire Gas & Electric Company in Bartlesville, Okla., five years, is now a yeoman in the Navy and stationed at the Great Lakes Naval Training Station.

Raymond V. Darby, formerly of the Kansas University and recently employed by the department of geology in Bartlesville, Okla., has enlisted in the Navy.

R. D. McClure, of the department of geology, Bartlesville, Okla., was called to the National Army recently, and is now training at Camp Pike, Ark.

Dr. M. Morgan is among those who enlisted recently from the department of geology, Bartlesville, Okla. He will enter the artillery training camp at Fortress Monroe, Va.

Luther V. Patterson, an oiler at the Bigheart compressor station, has joined the Navy.

R. A. Brown, in charge of the field payroll department, Bartlesville, Okla., will be called to the National Army between July 14 and 19.

D. H. Snow, agent for the Quapaw Gas Company in Joplin, Mo., has been appointed one of the vice-chairmen of the War Savings Committee of Jasper County.

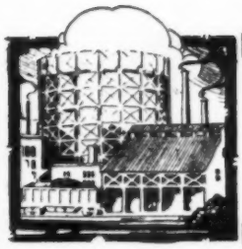
John W. Spence, for many years with the Southern Public Utilities Company, Charlotte, N. C., resigned during May to enter the service of the United States. Mr. Spence was foreman of the gas department at the time his resignation was tendered

The Los Angeles Gas & Electric Corporation's employees of the Pasadena district spent Sunday, June 16, in the aviation fields at Riverside as guests of Acting Sergeant Major Walter Schaffer, formerly connected with the business office, now in the ground division of the aviation section. Dinner was served at Mission Inn and the day was spent inspecting the aviation camp. Those who enjoyed the day together were: J. F. Tickner, J. C. Hansen, W. J. Newman, H. L. Eyer, W. J. Hawkins, C. L. Fouke, F. E. Purdy, E. J. Booth, J. G. Higbee, P. W. Cartwright, Jr., G. S. Campbell, G. G. Pierson, T. C. Thompson, D. N. Doyle and S. H. McClellan.

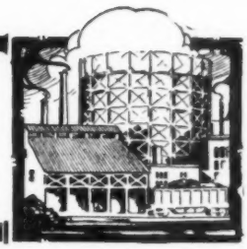
K. W. Graham, new business manager for the Fremont Gas, Electric Light & Power Company, Fremont, Neb., has resigned to enter the United States Navy.

Roscoe Woltz, formerly engineer with the Springfield Gas & Electric Company, Springfield, Ill., who recently resigned his place to take up Government work at Washington, has been granted a commission in the Engineer Reserves as second lieutenant.

Richard E. Johnson left the Peoples Gas Light & Coke Company, of Chicago, on April 8, 1917, to enter the United States marine service. He has recently been listed with those "seriously wounded." He started as a bill delivery boy and at the time of his enlistment was working in the application department.



NEWS OF THE GAS INDUSTRY



Portland Company's Carbon Briquette Supply Contracted for 3 Months to Come

The Portland (Ore.) Gas & Coke Company has notified the public service commission that it has contracted for all its carbon briquettes for three months ahead. After that date it will again take orders for them.

Service Charge on Long Island Abolished

The Long Island Lighting Company, the Huntington Gas Company, the Patchogue Gas Company and the Sea Cliff & Glen Cove Gas Company have abolished the service charge of 50 cents a month, according to a tariff schedule amendment filed with the Public Service Commission, Second District. The order affects Sag Harbor, Southampton, Brightwaters, Babylon, Amityville, Farmingdale, Patchogue, Bellport, Glen Cove and Sea Cliff, and the towns of Huntington, Southampton, Easthampton, Islip, Babylon, Oyster Bay and Brookhaven.

Service Badges Distributed to Public Service Employees

At the semi-annual distribution of service badges, made by the Public Service Company of Northern Illinois July 1, John Whitman received the emblem indicating that he has served thirty years. R. M. McColl and Chas. A. Heiss were given twenty-five-year badges. A. Gallagher and Herman Hacker were given twenty-year badges, Andrew McIntyre, Fred Steele, Frank Owen, Charles Langham, Theo Homan, O. L. Hyatt, A. C. Larsen, George Howard and C. M. French received fifteen-years badges. H. H. Clark, Grover Keeth, H. F. Lempuhl, M. J. Dugan, L. E. Turk, Chas. Koch, Chas. Rudd, Matthew Wahl, D. G. Gillen, Jeannette Galow, B. G. Smith, F. B. Minard, N. E. Devore, Moses Ray, William Hampton and Joe Ziemba received ten-year badges.

Fifty-five persons in the general office and the various divisions were given five-year badges.

The names of thirteen former employees now in the service of the United States Government appeared in the list of allottees at the distribution. They are C. J. Rosen, Wm. E. Anderson, Robert Arens, William J. Bown, Albert Daebel, Carl Franzen, H. A. Ingram, M. K. Kenny, M. A. Mathews, J. May, George Sherrington, Wm. C. Stephens and J. Trenkler. One of them, M. A. Mathews, died in camp in April last. This badge was sent to his relatives. C. J. Rosen received a ten-year badge and the others five-year badges.

At the time of the original institution of the service badge, 482 employees were given the emblem. The additions made since, including that of July 1, will bring the total number of wearers of the emblem to a figure above 750.

Ration Coal and Light in England Effective July 1

Coal and light are to be rationed in England under a new order effective July 1.

The plan provides for the rationing of gas, electricity and coal on a basis rate of 3½ tons of coal for two rooms in a dwelling house. For other rooms a ton each is allowed. Beyond that the consumer will not be allowed to go, so that if he is not economical he may find himself without either coal or gas before the year is up.

War Surcharge Granted Tuckerton Company

The board of public utility commissioners granted the application of the Tuckerton (N. J.) Gas Company for an increase in rates. Under the utility order the company may add a war surcharge of 25 cents per 1,000 cu. ft. of gas to its present rate.

Indianapolis Company Will Make Extensions in Accordance With Order

Even though J. Dorsey Forrest, general manager of the Citizens Gas Company, of Indianapolis, did not believe that war emergency demanded the extension of a certain line of gas service in Indianapolis, and even though he told the Indianapolis Board of Public Works that he doubted whether, under a technical interpretation of the company's franchise, he could be compelled to comply with the order, he told the board that the company will comply with the order and get the work done as soon as the necessary workmen and material can be obtained.

The question involved brought up the whole question of war-time extensions of gas service again. The company has made it clear to the city that it will make up, in normal years, all the extensions that it is impossible to make under war conditions.

Over the protest of the general manager of the company, the board ordered the extensions to Central Court, a street between Thirty-fourth and Thirty-fifth Streets, in which a realty company is building houses. The situation further emphasized the gas company's willingness to take on all burdens that it is possible to carry in the war situation. Under its franchise an annual extension totaling approximately 35,000 ft. is provided, but because of the labor shortage, the high price of materials and the fact that the company is pressed hard to supply Government war products, and also to take care of the great war-time extension in its business, and also because of the coal shortage, the company had appealed to the city for authority to discontinue its annual extension program until after the war, when all shortages would be made good, it was promised.

The board at the meeting outlined to Mr. Forrest exactly what would be expected of the gas company during the present period.

Both the members of the board and the Mayor explained to Mr. Forrest that they did not contemplate extensive improvements, but insisted that gas extensions should not be dropped entirely. Board members told Mr. Forrest that they had been informed personally of cases where a number of families could be accommodated with gas if only short mains were laid.

Mr. Forrest said that if his company is required to lay a great amount of mains it will not be able to buy coal.

"We have been notified by the Government to lay in a ninety-day supply of coal by Dec. 1," said Mr. Forrest. "That will cost us $1,250,000. Frankly, we don't know where we will get the money. We have large credit with our bank, but I don't know where we will get all the money necessary."

Mr. Forrest continued to explain that the board should take into consideration the enormous increase in the cost of all supplies used by the company and the labor situation. He said that if the company could be let off with as little main extension work as possible at this time it would make up for the decrease when conditions became normal. In that connection he cited figures to show that the company has laid more mains in the last few years than were ordered by the board.

The question of added revenue from new customers, the right to issue bonds recently granted the company for the purpose of increasing its equipment and the rise in rates authorized by the public service commission was brought up. Board members expressed the opinion that the new rates and increased business ought to enable the company to continue laying mains, but Mr. Forrest told them that such revenue would be absorbed by the greater cost of operation.

The board responded, however, that it could not see its way clear to stand in the way of extensions where they are found to be necessary and that such would be its course of action. A large number of petitions have already been placed before the board and repeated inquiries have been made as to what the board intended to do. How many of the petitions will be granted is uncertain, as all will have to be gone over by the board and the city engineer, but the board expects to reduce the extensions to a minimum in view of the present conditions.

The board ordered the gas company to lay mains in Central Court because the question has been hanging fire for a year or more. The realty company platted the ground, laid pavements and is erecting a number of houses. The gas company has declined to put in gas mains because it believed that the building company should pay part of the expense. The board of works in the last administration dedicated a street in the court for public use, and it was on this basis that the realty company insisted that the gas company pay all the expense of the mains. Mr. Forrest told the board that the number of houses in the court was not sufficient to compel the company, under its franchise, to lay the mains, but that the company had not in the past stood on that technicality. He expressed the opinion, however, that the board ought to compel the realty company to share the expense.

The city engineer declared that some steps ought to be taken by the city to remove the limit of a family for every 100 ft. "We would not be able to lay mains anywhere unless the streets were all built up under those circumstances," he said. "That ought to be fixed."

"It may be that we have contract rights that would prevent any change," answered Mr. Forrest.

Time for Improvement

The board decided that, in view of the fact that the street in the court was officially declared a public highway and that the realty company assured it that other houses are being built, the mains should be laid and issued such an order.

The board of works in the former administration ordered mains laid on North Illinois Street from Thirty-eighth Street to Forty-sixth Street, and, as this street is being improved the board asked Mr. Forrest when the gas company would be able to lay mains there. He responded that no assurance could be given in view of the uncertainty of obtaining material and men.

The National Fuel Gas Company has declared the regular quarterly dividend of $2.50 a share, payable July 15 to stock of record June 29.

Increase Notice Sent Out by Manchester Company

The Manchester Traction, Light & Power Company, Nashua, N. H., has sent the following rate increase notice to its consumers:

"By order of the public service commission the following rate schedule for gas sold will be in effect July 1, 1918.

"All customers will be charged a service charge as follows:

"Service Charge: For two, three and five light meters, 25 cents per meter per month; for ten-light meters, 30 cents per meter per month; for twenty-light meters, 35 cents per meter per month; for thirty-light meters, 40 cents per meter per month; for sixty-light meters, 60 cents per meter per month, and for 200-light meters, $1.40 per meter per month.

"In addition to the above-named service charge the following rates will be charged for gas consumed:

"Meter Rates: For first 10,000 cu. ft. per month, $1.55 per 1,000 cu. ft.; for next 20,000 cu. ft. per month, $1.45 per 1,000 cu. ft., and for excess above 30,000 cu. ft. per month, $1.35 per 1,000 cu. ft.

"The above charge for gas consumed will be subject to a discount of 20 cents per 1,000 cu. ft., provided the bill shall be paid by the customer at the office of the company on or before the tenth day of the following month.

"In accordance with above notice, all prepayment meter customers will be required to pay 25 cents per month on each meter. This amount *must* be paid to the collector at the time he removes the money, and a receipt will be given the customer.

"Manchester Traction, Light & Power Company,
"(Nashua Division)."

Permit Higher Rate for Salem & Peabody

Under the provisions of a decree issued by the State gas commission, the price of illuminating gas in Salem and Peabody, Mass., will be $1.25 net per 1,000 cu. ft. until the close of the war. The increase dates back to June 1. The Salem Gas Company has been charging its customers $1.10 net per 1,000 cu. ft., and petitioned the State commission for permission to advance the price to $1.30.

Empire Makes Record Oil Output

On June 17 the Empire Gas & Fuel Company pumped from the ground and into pipe lines or storage tanks 69,384 bbl. of oil, the record up to that time for any one day's production by the Empire Gas & Fuel Company, and according to many oil authorities a record production in the history of the petroleum industry for one day's production by an individual producing corporation.

What a daily production of 70,000 bbl. of high-grade crude oil means may best be realized by comparison with production in other oil fields. The production of the company's wells in Butler County, Kan., June 17 was greater than the entire Gulf Coast daily production, which in March averaged 56,971 bbl. daily, while the entire Appalachian oil district, comprising the States of New York, West Virginia, Ohio, Kentucky and Indiana, averaged a daily production of 64,517 bbl. in March.

Big Mortgage Executed by Louisville Company to Cover Bond Issue

The Louisville (Ky.) Gas & Electric Company recently recorded in the office of the county clerk a mortgage to the Harris Trust & Savings Bank, Chicago. The mortgage is to secure authorization for $20,000,000 worth of first and refunding gold bonds, which will be issued in $100, $500 and $1,000 denominations. These bonds will run from June 3, 1918, to June 1, 1923.

The mortgage paper is one of extreme size, requiring ninety typewritten pages. The recording fee for the mortgage was $60.

Employees of Louisville Company Boost War Saving Stamps

The Louisville (Ky.) Gas & Electric Company held a big rally of its employees June 27 to foster interest in the War Savings Stamps campaign. About 350 were present, among them the four eldest employees of the company, with a period of employment ranging from thirty-five to fifty-two years: W. S. Jennings, Captain John Martin, Fergus Fallon, Hugh Gannon. Philip Zimmerman, the thirteen-year-old son of A. Zimmerman, delivered an oration and won much applause. Following the young speaker Dr. Curran Pope urged that his hearers, by their subscriptions to the various war loans, particularly to the present, should help their Government, for they were a part of the whole and the failure of one unit meant the failure of the whole.

Several songs were sung. J. F. Hurst and Dr. Ben L. Bruner were also on the program, both laying stress on war conditions and the obligation resting upon every American to do his part. Music was furnished by a band from Camp Zachary Taylor. At the close of the exercises $10 in Thrift Stamps were distributed.

As the audience passed out they received pledge cards to be taken to their homes and filled out.

Gas Plan of Southern Counties Company Referred to Harbor Commission

The council recently referred the proposed franchise for the Southern Counties Gas Company of California to the harbor committee for report. The new gas line is intended to supply the shipyards and industries on the tidelands with ample natural gas for all purposes.

Two Missouri Companies Announce Increase

The Kansas City Gas Company and the Wyandotte County Gas Company, both of Kansas City, Mo., have announced an increase from 60 to 80 cents per 1,000 ft. for natural gas after July 28. An additional service charge of 50 cents a month for each meter is announced. The natural gas rate until a few months ago, when it was raised by the Federal Court to 60 cents, had been 30 cents per 1,000.

Additional Producing Well Leased by Investors' Oil and Gas Company

The Investors' Oil & Gas Company has secured an additional lease with one producing well, adding 600 barrels capacity per month to its present production. This lease is in the heart of the Evangeline field, Louisiana, and has a fully equipped rig and material on hand for another well, which will be started at once.

In addition to the present well and the one that will be started immediately, there are locations on this tract for at least a dozen more wells; and in view of the fact that this lease is in proven territory, this property will add materially to the production capacity and income of the company.

Report Seventeen New Wells Commenced in California for Week Ending June 22

During the week ending June 22 seventeen new wells were commenced in California, according to reports filed with the State Mining Bureau, making a total of 392 since the first of the year. There were also eighteen wells reported for test of water shut-off, ten for deepening or redrilling, and four for abandonment.

Order Establishing Regulations and Prices for the Handling and Sale of Bituminuous Coal Received by Rail and Water at Docks Located on the Great Lakes

The United States Fuel Administrator, acting under authority of an executive order of the President of the United States dated Aug. 23, 1917, appointing said Administrator and of subsequent executive orders and in furtherance of the purpose of said orders and of the act of Congress therein referred to and approved Aug. 10, 1917,

Hereby orders and directs that the following regulations are established and the maximum prices hereinafter specified are fixed for the handling and selling of bituminous coal by any corporation, association, partnership or person owning, operating, or managing a dock or docks on the Great Lakes, viz.:

(1) Rule 22 of the "Additional Rules and Regulations Governing the Distribution of Coal and Coke by Persons, Firms, Corporations, and Associations Subject to License, and Referred to in such Rules and Regulations as Licensees," shall be and the same is hereby amended to read as follows:

Rule 22. A licensee who, as owner or selling agent for another, delivers bituminous cargo coal to a dock company, retail dealer, or con-

sumer on the Great Lakes, in vessels or barges owned or chartered by such licensee, may charge a commission or profit not in excess of 20 cents a net ton on bituminous coal; and a licensee, who, as owner or selling agent for another delivers bituminous coal directly from cars via dock car-dumping machines to a vessel on the Great Lakes to be used as fuel for such vessel, may charge a commission or profit not in excess of 25 cents a net ton thereon. Where such fuel coal is handled over lighters or fuel scows, an additional charge of not to exceed 50 cents a net ton may be made for such service.

(2) The selling prices for bituminous coal received at any Lake Michigan or Lake Superior dock, during the period beginning June 1, 1918, and ending April 30, 1919, reshipped by rail from the docks to purchaser buying in carload lots, for the following grades of coal, per net ton f.o.b. cars at the docks, shall be as follows:

Coal from—	Lump	Run of Pile	Screenings
Youghiogheny, Fairmont, Greensburg, Westmoreland, No. 8 Seam, Ohio and Hocking and Pomeroy fields.....	$5.80	$5.55	$5.30
Harlan, Thacker, Kenova and Kanawha fields	6.30	6.05	5.80
Pocahontas, New River and Tug River fields	6.30	6.05	6.05

The above prices are based on the freight rates now effective between the mines and Lake Erie ports. In the event that the above mentioned freight rates are increased by order of the United States Railroad Administration effective at any time hereafter, an amount equivalent to the amount of such increase in freight rates may be added to these prices.

(3) For coal so received by lake shipment at any of the docks aforesaid, and sold for delivery by truck, wagon or other usual facility for retail delivery to consumers without any rail reshipment prices must be fixed and determined in the manner and according to the provisions and limitations prescribed in the regulations of the United States Fuel Administration, relative to maximum gross margins of retail coal dealers.

The above regulations, promulgated this fifth day of June, 1918, to become effective 7 a. m. June 1, 1918.

(Signed) H. A. GARFIELD,
United States Fuel Administrator.

THE OKLAHOMA NATURAL GAS COMPANY declared a quarterly dividend of 50 cents, payable July 20.

Rate Increase Petition Filed by Public Service Company of Northern Illinois

The Public Service Company of Northern Illinois last week filed a petition with the Public Utilities Commission of Illinois asking for increased rates in the towns of Streator, Ottawa, Seneca, Marseilles and Lawrence.

In Streator and Ottawa the rates asked for are $1.15 per 1,000 cu. ft. for the first 3,000 ft., $1 per 1,000 cu. ft. for the next three, and 85 cents for every additional 1,000 cu. ft. The rates in the other towns will be identical with those above, except that the first 3,000 ft. will cost the consumer $1.25. The reason given for the difference is that the latter towns are furnished from high-pressure distribution.

Temporary Agreement in Iowa City Rate Case Made

That Iowa City gas consumers will pay the advance rate of $1.60 for June and $1.35 thereafter until the rate controversy is settled is the substance of an agreement arrived at recently at a conference of the city council and representatives of the Iowa City Light & Power Company.

It was finally agreed by all parties that the best manner of procedure was for the city to employ an engineer or gas expert and have an invoice made of the plant; this would probably require six weeks or two months to secure a man, get the invoice and make report; in the meantime, in order to protect the consumer from the high rate, it was agreed that for a limited length of time a rate of $1.35, with 10 per cent off, should be the rate charged. However, as half of the statements for June were already made out, the new rate of $1.60 will be collected that month.

This was agreed to by all parties, with the understanding that it depended upon the approval of B. J. Devin, of Davenport, president of the company.

Further Delay Will Not Be Permitted in Peoples Rate Case

Circuit Judge Torrison will not permit further delays in the ten-million-dollar rebate case of the Peoples Gas Light & Coke Company.

The suit has been pending in court seven years. Only preliminary questions of law have thus far been disposed of. Testimony as to the valuation of the properties of the gas company between 1911 and 1916, the period in which the gas company alleges it should have been permitted to charge 80 cents per 1,000 cu. ft. of gas, will be introduced.

Higher Rate Asked for Fredonia

The Fredonia (Kan.) Gas Company has asked for a 100 per cent increase in gas rates, from 25 to 50 cents per 1,000 ft.

New Jersey Commission Permits War Surcharge for Two Companies

Although the board of public utility commissioners recently dismissed both the application of the Atlantic City Gas Company and the Atlantic City Suburban Gas & Fuel Company for increases in rates, the board announced it would permit each concern to add to its future bills certain war surcharges to meet additional operating expenses.

In its decision the utility board gives the Atlantic City Gas Company permission to file a schedule of rates, adding as a war surcharge to existing rates 35 cents per 1,000 cu. ft. of gas sold.

The Atlantic City Suburban Gas & Fuel Company is given permission to charge 25 cents a month as a fixed service charge without gas for each connected customer served through a three or five-light meter, and for each meter of large size the charge should be increased by an amount equal to 1 cent a month or 12 cents a year for each increase of one light in the meter above the five-light capacity. In addition to the service charge the rate for metered gas shall be $1.40 per 1,000, as a war surcharge. This order became effective July 1.

Pennsylvania Company Wants to Discontinue Service in Falconer

The Pennsylvania Gas Company has asked permission to discontinue the sale of gas in Falconer, N. Y., and village residents will send a delegation to oppose the request. The hearing will be held at the commission's office in the Iroquois Building.

Cincinnati Consumers to Pay 35 Cent Rate Until Final Decision Is Reached by Court

Final decision of Cincinnati's price for natural gas is delayed by the action of the Union Gas & Electric Company in taking the controversy into the United States Court.

On the application of the company Judge Hollister granted a temporary injunction stopping the city for the time being from attempting to enforce the ordinance of August, 1917, by which the rate is fixed at 30 cents per 1,000, and from doing anything to prevent the company from continuing to charge at the rate of 35 cents per 1,000 as provided by the ordinance of Oct. 3, 1916.

Pending the final decision of the case by the court the company is to deposit a bond of $250,000 as security for the refunding of overcharges to patrons in the event it is found that the 35-cent rate is not valid and legal. No time was appointed for the hearing of the case. Judge Hollister notified the counsel that the calendar for hearings is filled to July 26, the date at which the summer adjournment is in order, so that it is likely the case will not be reached before late in October or November.

Petitions for Rate Increase Filed by Massachusetts Companies

The New Bedford (Mass.) Gas & Edison Light Company July 2 asked the board of gas and electric light commissioners for permission to increase the price of gas from $1 to $1.15 per 1,000 ft. In May the board had raised the price from 90 cents to the present rate. Company claims it cannot make a fair return on invested capital at $1 rate under present abnormal conditions.

The North Adams (Mass.) Gas Light Company July 2 filed a petition with the board asking that the decision of 1911, whereby the price of gas was set at $1 per 1,000 ft., be revised by the board and that a larger return be granted.

Boston Consolidated Asks Increase

Boston Consolidated Gas Company recently asked the gas commission for authority to change its contract for supplying gas to East Boston Gas Company and Citizens Gas Light Company, of Quincy. A 10-cent increase is asked in each case.

Proposed rates would make price for East Boston company 55 cents per 1,000 ft. and for Citizens company 57½ cents.

H. W. Knott to Manage Force of Engineers at Work in Power Plants

Instruction and Inspection Campaign Brings Use of Fuel for Power Production to Highest Efficiency and Economy

The United States Fuel Administration on June 27 announced the appointment of Henderson W. Knott to manage the field force of engineers and inspectors which is at work among the power plants of the country, carrying out a campaign of instruction and inspection designed to bring the use of fuel for the production of power to the highest possible efficiency and economy.

Mr. Knott has been the general manager of the Morgan Crucible Company, of New York City.

The appointment of Mr. Knott is a part of the plan originated by David Moffat Myers, advisory fuel engineer of the Fuel Administration, to have each of the 250,000 steam plants in the United States visited by a competent man, who can make suggestions and report in connection with the questionnaire originated by Mr. Myers, working with committees from the four great engineering societies. This work will naturally require a large number of inspectors devoting their time to traveling among the steam plants.

This field force will be organized by States, in order to give it greater force and efficiency. Many of the State heads who work directly under State Fuel Administrators have already been appointed, and Mr. Knott, co-operating with Mr. Myers, will complete the list of State appointees. Mr. Knott will, at an early date, visit the States already organized to study the work being done by the men in the field, and to speed up the inspection program.

Temporary Increase Allowed for Cudahy and South Milwaukee

The Wisconsin Railroad Commission June 29 authorized the Wisconsin Gas & Electric Company to temporarily increase rates in Cudahy and South Milwaukee 20 cents per 1,000 cu. ft.

This increase is effective from June 1, and will cease to be effective Oct. 20, 1918, unless conditions then are as bad or worse than now.

Increase of 40 Cents in Proposed Gas Rate Bill for Knoxville

Injunction Restraining City From Interfering With Collection Asked

Announcing a new rate of $1.50 per 1,000 cu. ft. for gas, with a discount of 10 cents per 1,000 if the bill is paid on or before the tenth of the following month, and praying that a temporary injunction be issued restraining the city of Knoxville, its officers, agents or employees, from interfering in any way with the collection of that rate, or the operation of the plant with that rate in effect, the Knoxville (Tenn.) Gas Company recently filed a bill in the Federal court. The prayer of the petition further asks that, after the final hearing of the temporary injunction, that it be made a permanent injunction, and that the ordinance which fixes a maximum rate to be charged for gas in the city, and requiring the gas company to pay a certain per cent of its gross receipts to the city, be set aside.

The filing of this bill in the Federal court is the outcome of the failure of the company to secure relief from the city commission. When appealing to the city commission for relief the company asked for an increase of 20 cents per 1,000 cu. ft., but it is claimed that it will now require an increase of 40 cents per 1,000 cu. ft. to bring a fair return on the investment of the company.

Additional 25 Cent Increase Allowed Monroe Company

The Monroe (Wis.) Light & Fuel Company was granted an increase in gas rates to take effect July 1, 1918, and to be applied to the gas bills of Aug. 1.

The company was compelled to ask for a further increase in price, due to the fact that the continued advance in the price of coke, coal, oil and labor has exceeded increased revenue obtained from the rates granted Oct. 24, 1917, and that any reduction in the direction of lower cost of materials used in the gas industry cannot be looked for at the present time nor in the immediate future. Gas companies all over the country have been compelled to take like action.

The new rates granted are as follows: First 5,000 cu. ft. per month, $2 per 1,000; next 5,000, $1.85; third 5,000, $1.75; fourth 5,000, $1.65, and fifth 5,000, $1.60. All over 25,000, $1.50 per 1,000.

The increase granted is 25 cents on every 1,000 cu. ft.

Newburyport Company Wants $2 Rate

The State board of gas and electric light commissioners will give a hearing at City Hall on the petition of the Newburyport (Mass.) Gas & Electric Company for permission to increase its rate for gas 60 cents per 1,000, making it $2 instead of $1.40, as advanced to last October.

Temporary Rate Increase Granted Southern Illinois Company

The State public utilities commission has announced it has made effective as of June 1, 1918, temporary rates for gas supplied by the Southern Illinois Light & Power Company at Litchfield, Hillsboro and Schram City, Ill. The commission declares that nothing in the order shall operate to modify the terms and conditions of the suspension order issued by the commission on April 29.

If the further investigation by the commission decrees that the rates are too high the order decrees that the company shall pay back each consumer plus 6 per cent interest.

The commission declares that it is the policy of the Federal Government to keep the public utilities at a high state of efficiency and that the commission granted an increase on the company's declaration that its service at the above-named places would deteriorate unless the increase was granted.

The rates are for $1.50 per 1,000 ft. with a 25-cent service charge per customer.

Distribution of Unskilled Labor

The Service Executive Committee of the Chamber of Commerce of the United States issued a bulletin in order that members of the National Chamber may be placed in possession of information regarding an important step which is being taken for the better co-ordination of industry in its task of meeting the requirements placed upon it by the war. The following outlines the plan of the service:

Federal employment offices were originally operated in connection with the immigration service. Under the United States employment service, recently established, they have now been greatly developed, separated from the immigration service, and made an important agency of the war labor administration. The employment service is not a new form of the old agency. It is a new and distinct service, which undertakes functions of great importance to all employers and with which they should co-operate during war.

After Aug. 1 the United States employment service will undertake to be the medium through which employers in the United States obtain their unskilled labor. In other words, from that date the employment service will operate its branch offices as labor exchanges—i. e., as instrumentalities for bringing together workers and the employers who need their services.

Such a labor exchange will constitute for its community a place where all employers can confidently expect to learn of all the workers available for the exact positions they desire to fill and every worker with equal confidence can expect to learn of all the opportunities for employment that are open to him.

A letter addressed to President Wilson on June 15 by the Secretary of Labor sets out the considerations which lead the War Labor Policies Board to recommend to the President that he inaugurate the plan. The following is an abstract from the President's letter dated June 17:

"Therefore, I, Woodrow Wilson, President of the United States of America, solemnly urge all employers engaged in war work to refrain after Aug. 1, 1918, from recruiting unskilled labor in any manner except through this central agency. I urge labor to respond as loyally as heretofore to any calls issued by this agency for voluntary enlistment in essential industry. And I ask them both alike to remember that no sacrifice will have been in vain, if we are able to prove beyond all question that the highest and best form of efficiency is the spontaneous co-operation of a free people."

For success, labor exchanges obviously must be managed in such a manner, and under such auspices, as to assure their entire impartiality and their operation solely as agencies for co-ordinating supply and demand for labor, with elimination of all possible waste. Assurances of this kind, both for employer and for workers, is usually sought through supervision by a committee composed equally of representatives of employers and of workers.

The plan of the employment service contemplates the use of such committees, to be known as advisory councils. In each of the thirteen districts into which the country is divided there are to be advisory councils. They will consider questions of policy important to their districts, and advise the directors of the service who are in charge of the districts. Larger questions of policy will be referred to Washington, for decision by the central War Labor Policies Board.

Centralization of recruitment of unskilled labor, to be inaugurated on Aug. 1, will affect establishments employing one hundred or more workers. Establishments employing a smaller force will be free, if they choose, to proceed in their usual manner.

The establishments which come within the plan, too, will be permitted to hire in the ordinary way such workers as present themselves without inducements from the employer. In other words, employers will be free to engage men who offer themselves at the factory gate without having been solicited, directly or indirectly.

The plan is intended to put an end to the waste and the disorganization which arise from "stealing labor." It is meant to substitute an orderly procedure through which each establishment will be able to supply its needs for unskilled labor in accordance with importance of the work upon which it is engaged. So far as the plan operates to withdraw unskilled labor from industries not directly connected with the war, the withdrawals will be distributed as equitably as possible, under control from the central War Labor Policies Board.

Priorities for labor will be established only where there is an actual shortage. Such priorities as are given will accord with the priorities determined for fuel, materials, etc., by the War Industries Board.

Other principles that have been determined support the general purpose of the plan. For example, the local supply of labor is to be applied to meet the local demand. Workers will be transported from one community to another only when conditions leave no alternative, and then they will be transported the shortest possible distance.

The plan was proposed by the War Labor Policies Board on the ground of military necessity. It is urged by the President upon employers and workers for their solemn consideration and immediate acceptance. Its usefulness as a method of relief for managers, and as a service to workers who desire employment that is essential during war, is expected to guarantee success. In other words, no obvious form of compulsion is announced, and voluntary acceptance is expected.

At the same time, the plan has the support of the Government's agencies which control fuel and materials. This circumstance is counted upon to protect establishments which accept the plan by assuring them that they will be under no disadvantage.

The proposed monopoly of the employment service in distributing unskilled labor does not now extend to skilled labor. For the present, skilled labor may be recruited by all employers as heretofore. At the same time, the offices of the employment service will in no wise decrease their services in providing skilled workers.

Permission to Issue Additional $1,500,000 Stock Sought

Claiming that increased carrying charges of materials and supplies as well as other expenditures make greater capital resources necessary, the Public Service Gas Company, through General Solicitor L. D. Howard Gilmour, applied to the State board of public utility commissioners at Newark, N. J., recently for permission to issue an additional $1,500,000 in common stock, which would increase its total capitalization to $15,100,000. Mr. Gilmour said the Public Service Corporation was prepared to take $750,000 of the new stock at par.

A representative of the company's auditing department explained that during 1917 it was necessary for the company to lay out $500,000 for carrying materials and supplies in addition to the regular appropriation for this purpose, and Henry D. Whitcomb, vice-president and general manager of the company, discussed other expenditures. He said the company had completed a tunnel under the Hackensack River, forming a connecting link between the Jersey City and Newark gas plants, at a cost of $108,500, and that the capacity of the Brunswick Avenue gas works, Trenton, has been increased from 1,500,000 cu. ft. a day to 3,000,000 cu. ft., this work also entailing a large expenditure.

Kentucky Company Contracts for Additional Supply of Gas

The Central Kentucky Natural Gas Company, whose pipe lines supply Paris, as well as the surrounding towns, has closed a contract with the Local Oil & Gas Company, with headquarters in Winchester, for the entire production of gas from their three wells near Mize, in Morgan County. The production of these wells is approximately 3,000,000 ft. of gas per day, and will be used toward supplying Mount Sterling, Winchester, Paris and Lexington.

With this new source of supply such conditions as prevailed last winter because of the shortage of gas will be practically eliminated. Connections from the wells to the main pipe line are now being made.

The Arkansas Natural Gas Company recently announced that an advance of 5 cents per 1,000 ft. would be made in Pine Bluffs, Ark.

Right to Increase Rates Before November Denied Minneapolis Company

There can be no adjustment of gas rates in Minneapolis, Minn., upward or downward until Nov. 1, according to an opinion handed down June 29 by the Supreme Court denying the appeal of the Minneapolis Gas Light Company from an order made by District Judge J. W. Molyneaux refusing to open the judgment entered April 8, 1914, fixing the gas rates by consent of the city and company.

New Schedule of Rates for Keene

New gas rates for the Keene (N. H.) Gas & Electric Company recently went into effect, also a service charge for each meter, which are emergency rates subject to change at any time the emergency may warrant.

The rates provide for a service charge varying from 25 cents per month for a two, three and five-light meter to $1.10 per month for a 110-light meter. A block meter rate for gas allowed ranges from $1.60 gross and $1.50 net for the first 10,000 cu. ft. per month to $1.20 gross to $1.10 net for more than 50,000 cu. ft.

Oberlin Company Granted Increase

At a recent meeting the Oberlin council made a contract for gas for the year beginning July 1 at 45 cents per 1,000. The contract provides that if conditions warrant a price of 50 cents later in the year will be granted. The question of further increase in price is to be determined by the Ohio Utility Commission.

Personal Notes

William A. Aldrich has just returned to Grand Rapids, Mich., from Monterey, Mexico, having completed the reconstruction of the gas plant there, which is now in full operation after being shut down for two years, owing to damage caused by the revolutionists.

A. W. Hale, who has been commercial agent for the Empire refineries, with offices in Kansas City, has been assigned to the position of assistant traffic manager in Tulsa.

I. E. STEWART, of the department of geology of the Empire Gas & Electric Company in Bartlesville, Okla., sent in his resignation, which took effect July 8.

THOMAS F. CURLEY, son of the late Thomas Curley, founder and for fifty-six years engineer and superintendent of the gas industry in Wilmington, Del., has resigned the position as superintendent of the Wilmington Gas Company, to take effect July 15, 1918. He entered the service of the company on June 27, 1887. Under the teachings of his father and his close application to the business, he became a thoroughly informed gas engineer. His discourses on the manufacture of gas was always instructive, as he possessed both the practical and theoretical knowledge of the subject.

WALTER D. MYERS, now commercial engineer for the Louisville (Ky.) Gas & Electric Company, has been chosen by the War Industries Commission of the Board of Trade to represent Louisville manufacturing plants at Washington, where he will endeavor to land war work contracts for the big factories in Kentucky. Mr. Myers is a comparatively young man, being thirty-seven years old. He is a native of Missouri, and got the first business experience with the light and power company at St. Louis. He was for some time with the Kentucky Electric Company, and when that company consolidated with the Louisville Lighting Company and other utilities corporations he went with the consolidation.

R. E. LANDERS, new business manager for the Bristol (Tenn.-Va.) Gas & Electric Company, has been transferred to the Niagara Light, Heat & Power Company, Tonawanda, N. Y.

E. H. BEAM has been transferred to Pueblo, Col., as new business manager for the Pueblo Gas & Electric Company, to succeed B. R. Jardine. Mr. Beam was formerly located at Tonawanda, N. Y., as new business manager of the Niagara Light, Heat & Power Company.

THE DOHERTY ORGANIZATION has made several changes in its personnel of new business managers: J. B. Wilson, from the Meridian (Miss.) Light & Railway Company to Massillon (Ohio) Electric & Gas Company, succeeding L. J. Lemen; J. J. Fagan, of Salina (Kan.) Light, Power & Gas Company, succeeds J. B. Wilson; T. O. McMillan, from the Orrville (Ohio) Gas Company to Fremont (Neb.) Gas, Electric Light & Power Company; George Rauch, of Joplin (Mo.) Gas Company, succeeds T. O. McMillan.

M. B. LAYTON, assistant manager of the Manufacturers Light & Heat Company, Pittsburgh, Pa., has been appointed general manager to succeed T. O. Sullivan.

Joseph P. Tufts in Meter Business for Fifty-Eight Years Dead

The Nathaniel Tufts Meter Company, of Boston, Mass., announced with sincere regret the death of Joseph P. Tufts.

Mr. Tufts had been associated with the meter industry for over fifty years, and was one of the four Tufts brothers who established the meter business in Boston in 1860.

He was born in Malden in 1839, and leaves a widow, Mrs. Frances Ann Tufts. They made their home in Cambridge, Mass., for the past thirty-five years.

Mr. Tufts was a quiet and retiring man, but his nobility of character and kindly bearing won him many friends. For the past twenty-two years he was treasurer of the Nathaniel Tufts Meter Company.

Mr. Tufts was an associate member of the New England Association of Gas Engineers and the Guild of Gas Managers.

Societies and Associations

THE ILLUMINATING ENGINEERING SOCIETY, New York Section announces the election of the following officers of the council for the fiscal year 1918-1919, which were confirmed by the concil on June 13, 1918. These men were elected to fill the offices made vacant by expiration of terms: President, George A. Hoadley; vice-presidents, Otis L. Johnson, H. K. Morrison and H. A. Hornor; general secretary, Clarence L. Law; treasurer, L. B. Marks; directors, John C. D. Clark, Evan J. Edwards and James J. Kirk.

The election of the following section officers was confirmed at this meeting:

New York Section—Chairman, F. M. Feiker; secretary, L. C. Porter; managers, W. J. Clark, John P. Hanlan, L. J. Levinson, G. W. Magalhaes and John P. Radcliffe.

New England Section—Chairman, H. F. Wallace; secretary, Horace W. Jordan; managers, G. N. Chamberlin, John C. D. Clark, Raymond A. Fancy, G. A. Gallagher, Jr., and A. F. Nelson.

Philadelphia Section—Chairman, James D. Lee, Jr.; secretary, H. B. Andersen; managers, C. E. Clewell, Washington Devereux, R. B. Duncan, W. L. Robertson and N. Wiley Thomas.

Chicago Section—Chairman, A. O Dicker; secretary, Frederic A. DeLay; managers, F. F. Fowle, James J. Kirk, A. H. Meyer, W. W. Soffe and F. A. Watkins.

THE CANADIAN GAS ASSOCIATION has made arrangements to have the following papers prepared and read at the convention in August: "Experiences of Robert Young in His Early Days in the Gas Business," by J. M. Young, London; "The Commercial Department in War-time," by W. B. Johnson, Montreal, Que.; "Pensions for Old Employees," by C. S. Bagg, Montreal, Que.; "Standardizing Service Pipe Installations," by C. H. Caughel, St. Thomas; "The Calorific Standard for Town Gas," by Arthur Hewitt, Toronto, Ont.; "Development of the Industrial Fuel Field," by C. D. Slimpin, Montreal, Que.; "Possibilities Ahead of the Gas Industry, as Revealed by Digest of Reports from Many Sources," by G. W. Allen, Toronto, Ont., and "Junior Membership in the Association," by the secretary.

THE PACIFIC SERVICE EMPLOYEES' ASSOCIATION held their second annual banquet and get-together meeting in the ballroom of the Palace Hotel, San Francisco, June 20. Following an excellent dinner, during which the Pacific Service Orchestra, under the direction of L. A. Melbourne and Homer Keesling, rendered a number of selections, the Pacific Service Chorus of fifty sang. The quartet composed of John Gilbert, Dick Hunt, Frank Figone and James Lewis, sang several numbers. Mr. Figone rendered a solo, followed by Miss Georgette L. Renault, who

rendered one of Verdi's selections from "Il Trovatore" and "La Marseillaise," the French national anthem. Charles Mills Gayley, dean of the faculty at the University of California, was the principal speaker. His address was along patriotic lines, bringing out the duty imposed upon civilians as well as soldiers in the prosecution of the war. C. P. Cutten acted as toastmaster. Other speakers were John A. Britton and A. F. Hockenbeamer.

Gas Plant Discussed for Gaffney

There is considerable discussion in Gaffney, S. C., as to the feasibility of putting in a gas plant.

Portsmouth Company Permitted to Raise Rates

The Portsmouth Gas Company has been granted by the public service commission authority to increase its rates, as asked by them on Feb. 26, 1918.

The following schedule was ordered effective July 1:

Service Charge: Two, three and five light meters, 25 cents per meter per month; ten-light meters, 30 cents; twenty-light meters, 35 cents; fifty-light meters, 40 cents; forty-five-light meters, 50 cents; fifty-light meters, 55 cents; sixty-light meters, sixty cents; eighty-light meters, 75 cents; 100-light meters, 80 cents; 150-light meters, $1.10; 200-light meters, $1.40; 250-light meters, $1.70.

Meter Rates: First 10,000 cu. ft. per month, $1.55 gross, $1.45 net; next 20,000 ft., $1.35 gross, $1.25 net; excess of 30,000 ft., $1.25 gross, $1.15 net.

Oil and Gas Company Organized

Papers incorporating the Gadsden Oil & Gas Company have been filed for record. The capital stock is placed at $2,000 and divided into twenty shares of $100 par value each. All of it has been paid in.

F. P. Jackson, of Birmingham, is president; A. S. McGregor, of Birmingham, is secretary and treasurer. They and G. A. Carswell, of Gadsden, are the incorporators.

The company was formed to bore for gas in Owl's Valley in the northern outskirts of Gadsden, Ala.

THE LACLEDE GAS LIGHT COMPANY earned $4,800,264 gross in 1917, being an increase of 15 per cent over 1916, but net declined about 10 per cent to $2,247,714. This figured out at 8½ per cent on the $10,700,000 of common stock, compared with 11¼ per cent in 1916. The decline was due to higher cost of coal and oil, also to Government price-fixing on by-products. Interest charges were covered nearly twice. There were outstanding as of Dec. 31 $10,000,000 of first mortgage and $10,000,000 refunding bonds, $3,850,000 of debentures, and $2,500,000 preferred stock. The bonds are a high-grade investment. Continuing contracts for coal and oil will prevent any great increase in operating expenses this year.

Southern California Gas Earnings

The official statement of the earnings of the Southern California Gas Company for the twelve months ended April 30 last, with comparisons, are as follows:

For 12 months ended April 30:	1916	1917	1918
Gross earnings	$914,528	$1,125,650	$1,588,676
Operating expenses and taxes	614,618	733,658	1,099,970
Net earnings	$299,910	$391,992	$488,706
Other income	76,813	126,264	57,450
Total net income	$376,723	$518,256	$546,156

The company experienced an even relatively better gain in the first four months of 1918 over 1917. The gross for the first four months of this year was $515,895, an increase of $177,576, or 34.4 per cent. The total net income for the twelve months was more than two and one-half times the annual bond interest charges and net earnings from gas operations alone was practically 2.4 times these requirements. The company is eight years old and supplies gas at retail and wholesale for light, heat and fuel purposes in Los Angeles, the near-by cities of Riverside and San Bernardino and seventeen other cities and towns in southern California, the combined population of which is estimated at more than 600,000. The first mortgage 6 per cent bonds of 1950 are outstanding to the amount of $3,382,000, and $30,000 Riverside Light & Fuel Company first 5s of 1923.

THE NEW YORK MUTUAL GAS LIGHT COMPANY has declared a semi-annual dividend of 5 per cent.

THE HAVERHILL GAS LIGHT COMPANY declared a quarterly dividend of $1.12½. Last year it declared $2.25 for the quarter.

THE UNION NATURAL GAS COMPANY declared the regular quarterly dividend of 2½ per cent.

THE KANSAS GAS & ELECTRIC COMPANY declared the regular quarterly dividend of 1¾ per cent on preferred.

THE WESTERN STATES GAS & ELECTRIC COMPANY reports its net earnings for May were 15.8 per cent greater than for May, 1917, and for the year ended May 31, 6.9 per cent greater than for the preceding year. Gross earnings for May were $130,669, an increase of $20,358 over May, 1917; net earnings $56,236, an increase of $7,678. For the year ended May 31 gross earnings were $1,494,523, an increase of $199,298; net earnings $655,625, an increase of $42,395.

THE BLACKSTONE VALLEY GAS & ELECTRIC COMPANY reports May gross $197,632, increase $45,270; net after taxes $60,812, increase $9,490; surplus after charges $38,810, increase $8,464. Twelve months gross $2,124,151, increase $299,378; net after taxes $639,852, decrease $78,815; surplus after charges $379,571, decrease $86,937.

THE PACIFIC GAS & ELECTRIC COMPANY, according to the annual report, earned a balance available for the $34,000,000 common stock in public hands of $1,677,342 in the calendar year 1917. This was a decrease of $1,191,995 from the $2,869,337 reported in 1916. This was equal to 4.93 per cent on the outstanding common, compared to 8.44 per cent in the preceding year. Such a reduction in earnings was shown despite an advance in operating revenue of $1,197,883, or 6½ per cent.